CHOOSING YOUR LIFE WORK

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CHOOSING
YOUR LIFE WORK

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INTRODUCTION

"Education in a democracy, both within and without the school, should develop in each individual the knowledge, interests, ideals, habits and powers whereby he will find his place and use that place to shape both himself and society toward ever nobler ends."—*Bulletin No. 35, 1918, U. S. Bureau of Education.*

"It is better to choose a vocation than merely to hunt a job."—*Frank Parsons.*

"Until society faces the question of the life careers of its youth, the present vocational anarchy will continue to beset the young work-seekers."—*Meyer Bloomfield.*

"The school is the institution best qualified to bridge the gap between education and industry."—*Merton C. Leonard.*

Until society recognizes its responsibility for the scientific guidance of our youths into their respective places in the world of industry, we must continue to carry the heavy burdens entailed by vocational disorganization. The futility of expecting our young people to find their own places without any assistance beyond the rudiments of education is shown by the fact that nearly 50 per cent of the labor turnover in the industrial and commercial establishments of the United States occurs during the first six months of employment. In this field, as in most others, the *laissez faire* policy is a failure. Never before have the sons and daughters of the people been turned out of school to earn their own living in such large numbers or into so complex a social order. Never before has there been such an insistent cry for help from a stumbling, groping, bewildered youth.

A moment's reflection will reveal four specific results of our failure to give boys and girls the assistance they need during the period of transition from school to work:

1. The employer is obliged to maintain a larger and more expensive department for hiring and discharging workers.
2. The productive power of the nation is heavily restricted.
3. We have in our midst an army of misfits in the industrial world, who skip from job to job and eventually contract a distaste for all honest labor, and perhaps drift into questionable pursuits.

4. There is a discontent among workers, who are dissatisfied and unhappy, largely because of being tied to the wrong job.

We, the American people, are not living up to the standards of social and industrial justice which we profess to believe in. Instead of helping boys and girls to choose their vocations, we are leaving them to hunt jobs. Instead of conserving the finest values of the nation, we are complacently gambling in human lives.

Since the burdens of our vocational disorganization fall upon society, it is the right and the responsibility of society to apply the remedy—the scientific, educational and vocational guidance of youth; and this form of social service, which aims directly at a better utilization of human resources, should be undertaken, and in a limited way is being undertaken, by democracy's chief agent—the public school.

Beginning not later than the seventh grade, the life-career motive should exert a powerful influence in all school work, which means that, from the age of twelve or thirteen onward, children should have the advantage of wise counsel in working out a plan for their future.

Vocational guidance does not aim to dictate to a boy what his future shall be; it aims merely to give him disinterested adult guidance in discovering his own aptitudes, capacities and limitations, and to furnish him with some knowledge of the various occupations. To achieve these ends, it seems imperative that new machinery should be set up in the schools—new features added to the school system. The minimum requirements for effective work would seem to be these:

1. A Supervisor of Vocational Guidance or a Committee on Vocational Direction.

2. A Vocational Bureau for the school district.

3. At least one Vocational Counselor or a committee of such counselors in every high school, every intermediate school and in every elementary school having seventh and eighth grades.

4. A modification of curricula, subject matter and methods of instruction in accord with vocational aims.

The greatest obstacle in the way of carrying out such a program, aside from a backward social conscience, is doubtless the lack of knowledge of the occupations, trades and professions on the part of the teachers.

Although there is a large and fertile field of reading matter on this fascinating subject, it is so scattered and so varied in mode of treatment that it is not readily available. Hence, this volume, which contains both a practical psychological treatment that would assist in the work of self-analysis, and a vast store of well-arranged information about the various occupations, should prove a boon to any community which attempts the task of routing its youth into the various occupations, trades and professions.

So thoroughly has the author done his work that the book is a veritable gateway to a liberal education in contemporary industrial, commercial and professional life. Each bibliography, while not exhaustive, is yet sufficiently copious to include the very latest and best in its chosen field. Here we have a uniform treatment covering all the essential points in the study of scores of occupations, trades, callings and professions. It is worthy of note, too, that the author has not confined his discussion to the advisability of doing certain things, but has actually worked out a practical plan of procedure.

But the use of such a work should not be confined to the Supervisor of Vocational Guidance and the Vocational Counselors; it should be in the hands of every teacher who has charge of boys and girls old enough to feel the vital appeal of the question: "What are you going to be when you grow up?" Under the stimulus of the vocational enlightenment and suggestion that teachers may imbibe from this volume, practically all of the subjects of the curriculum may be given the vocational slant.

Borrowing a phrase from the business world, let the teachers begin to introduce the life-career motive by "selling" their respective subjects to their pupils. Let the algebra teacher show how algebra is related to the insurance business, to the construction of skyscrapers, to bridge building, to the dropping of bombs from an aeroplane, to the firing of the projectile, etc. Let the teacher of geometry point out some of the geometry in carpentry, architecture, tunnel construction, sheet-metal work, surveying, railroading, etc. Let the physics teacher show how intimately the principles of his subject are related to all engineering, construction work, household sanitation, the structure of the human body, etc. Let the teacher of chemistry make clear how closely chemistry is related to various occupations: agriculture, pharmacy, the manufacture of paint, soap, inks, dyes, leather, steel, batteries, cement, etc., and convince his pupils that they must know a great deal about the subject in order to qualify for any one of these occupations. Let the teacher of biology show that his science lies at the foundation of plumbing, agriculture, bacteriology, sanitation, medicine, veterinary science, dentistry, poultry raising, dairying, horticulture, pharmacy, etc. Teachers of arithmetic, civics and commercial geography should take account of the fact that many boys have lost good positions in the business world because they were deficient in these subjects. Where feasible, these teachers should show the relation of their subjects to civil service, the grocery business, office work, exporting and importing, traffic management, railroading, etc. The history teacher may also share in this work by tracing the history of industrial development and showing how it influenced and was influenced by important historic events and periods.

Some years ago, in the high school at Grand Rapids, Mich., under Jesse B. Davis, there was "inaugurated a plan of teaching a knowledge of vocations through the regular course in English. Little noticed at first, this method has had a remarkable influence, especially in interesting teachers in occupational problems, and placing the task of vocational guidance directly upon the public schools."[1]

The public is seriously questioning the value of an education that largely ignores modern life and concerns itself chiefly with academic matters and events of the past. Thoughtful people are becoming exasperated that the public schools, by clinging to traditional courses of study, should persist in driving away half the boys and girls of the nation before they are fifteen years old to drift about hopelessly from one job to another.

Let the teacher once become animated by the thought that every pupil in his class is being prepared to do a share of the world's work, and also by the notion that the subject matter of the various studies may be used as an instrument for exploring the capacities and revealing the aptitudes and limitations of boys and girls, and the school will become transformed. In the schools that are energized by the life-career motive, both teacher and pupils find the work wonderfully fascinating. The new point of view gives aim and purpose to the various studies of the curriculum, and the question so often met, "I'm never going to use that subject, why should I study it?," finds its answer in the regular work of the classroom.

The time is at hand when every normal school should have a course in the Principles and Practice of Vocational Guidance and the Study of Occupations. Every teacher, every normal school graduate, should know how to study an occupation, how to analyse it and how to present it to pupils in its relation to the subjects they are teaching; all this, with a view to creating an incentive that will motivate school work with the most vital appeal possible —self-interest.

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[1] From "Vocational Guidance and the Public Schools," Bulletin No. 24, Bureau of Education, 1918.

Teachers, vocational counselors, managers of industrial plants who are striving to reduce labor turnover, young people who have left school and have ambitions to rise, older people who are discontented with their station in life and all others interested in educational and vocational guidance, placement work or follow-up work should find this book a most valuable compendium for study and reference.

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JERSEY CITY, N. J.,
February, 1924.

PREFACE

The object of this book is to present, in plain and non-technical language, a simple and effective plan whereby the individual may analyze his own capacities, aptitudes and interests, compare them with the requirements of representative occupations and plan his career accordingly. While designed primarily for the use of the individual directly concerned, it should prove of equal value to the professional vocational counselor and to all others—parents, teachers and social workers—who are at times called upon to act in the capacity of vocational counselor.

When the author first engaged in vocational guidance work, he felt that the demands upon his services would be made chiefly by young people still in school. While this has proved true in the main, a surprisingly large proportion of those who have sought his counsel were adults. Men and women in all walks of life, including common laborers, office workers, farmers, mechanics, teachers, lawyers, doctors, engineers and bankers, have sought means of escape from the misery imposed by uncongenial employment. While the extent of this vocational dissatisfaction among adults at first seemed surprising, upon more mature consideration it seemed to be but the logical consequence of the lack of early instruction and guidance in choosing an occupation.

The fact is that our already overburdened school curriculum fails utterly to meet this vital demand that is being made upon it. While providing varied and expensive instruction in numerous occupations, the school has neglected to help the immature student make a wise choice. Most of the information about occupations which the average pupil receives is mere hearsay, picked up from other persons equally ignorant, or from unofficial and oftentimes biased sources. Upon this scant and unreliable information, the pupil selects an industrial, a commercial or a technological course and decides to prepare for architecture, accounting, engineering or what not. It is not surprising, therefore, that under such circumstances so few pupils pursue their studies until the end, or that such a small proportion of those who do graduate and enter the occupation of their choice find success or happiness in their work. As a consequence, not only is the student's future seriously jeopardized, but the large sums of money spent on his aimless and fruitless education are wasted; our schools are overcrowded with unwilling students who see no connection between the studies they are required to pursue and their future life work; and society is burdened by discontented and inefficient workers.

The school must undertake to stem the growing tide of vocational restlessness and its consequent evils by reorganizing its curriculum to include a study of the field of occupations for the purpose of comparison and selection. A great deal has already been done in this direction by schools and teachers all over the country, but the surface has only been scratched. Every normal school and college of education should provide a course in vocational guidance, so that every teacher, at least in the upper grades of the elementary schools, and in the trade, vocational, secondary and continuation schools, may obtain a working knowledge of approved vocational guidance practice. While it is not the aim of this book to provide a plan for the organization and administration of vocational guidance, it is hoped that this volume may prove valuable as a reference in connection with vocational guidance courses in the normal schools and colleges, and in the actual guidance work in the trade, vocational, secondary and continuation schools.

In choosing a vocation, there are two main considerations—the personal qualifications of the worker, and the requirements of the occupations. In this book emphasis is placed on the occupational rather than on the personal side of the problem, because in dealing with occupations, we are on solid ground, while in the study of the personal side of the problem, we are still in the realm of experiment and speculation. In the old days, vocational guidance concerned itself chiefly with the personal side—the determining of occupational fitness and promise by means of such studies as phrenology and physiognomy. Even today many people, even among the better educated, are led to believe in the efficacy of these pseudosciences. Because of their historic interest, and in order to point out their fallacies, a brief study of phrenology and physiognomy is included in this book.

Ignorance of the demands of occupations other than one's own is a frequent cause of dissatisfaction. A man who sees only the pleasant side of another's calling is more likely to become dissatisfied with his own occupation than a man who has made a general study of a large number of occupations and is familiar with their unpleasant demands as well as with their advantages. A study of this book will not infrequently bring contentment to a man by showing him the inadvisability of making a change; while, on the other hand, where such a change is desirable, a study of the field of occupations in accordance with the instructions contained in this book should furnish the basis for a wise choice.

It is not the intention of the author that the seeker of vocation guidance or information should depend entirely upon this book. On the contrary, the author hopes that this book will point the way towards further study of this important subject. There never was a time when opportunities for the well-trained worker were so great and numerous; on the other hand, it was never so easy for the careless or indifferent individual to drift into undesirable and hopeless pursuits. It is only by careful study and thoughtful discrimination that the opportunities may be recognized and the pitfalls avoided.

It is the confident belief of the author that a careful and conscientious study of this book and a compliance with its instructions will enable any average adult to solve his vocational problem; and with the aid of a teacher or other competent and disinterested adviser, the adolescent should obtain equally gratifying results.

To the late Eli Witwer Weaver, a pioneer in vocational guidance work, the author is indebted for inspiration and for encouragement in the writing of this book. Acknowledgments are also due to Merton C. Leonard for his scholarly introduction, and to Frank E. Mathewson, director of the Industrial Department of the Wm. L. Dickinson Technical and Industrial High School, for valuable help and advice in connection with the publication of this book.

The author is also indebted to the many pioneers in the vocational guidance movement, notably Dr. Frank Parsons, Meyer Bloomfield, Dr. John M. Brewer and Prof. Charles L. Jacobs, whose works have been a help and an inspiration; to the numerous writers of the books and other publications listed in the bibliographies, and to the countless men and women in industry, business and the professions, for valuable information on the occupations.

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WM. L. DICKINSON HIGH SCHOOL,
JERSEY CITY, N. J.,
February, 1924.

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CHOOSING YOUR LIFE WORK

> "No two persons are born alike but each differs from the other in individual endowments, one being suited for one thing and another for another, and all things will be provided in superior quality and quantity and with greatest ease, when each man works at a single occupation, in accordance with his natural gifts." *Plato* (427–347 B. C.).

CHAPTER I

CHOOSING A VOCATION

The choice of a vocation is undoubtedly one of the most important questions you will ever be called upon to consider. Few acts are fraught with more unhappiness and regret than that of stumbling into an occupation instead of making a careful and deliberate choice, based upon a painstaking study of the aspirations and qualities within you and the opportunities all around you. The life work you choose will be your deepest source of happiness or of sorrow, depending upon whether or not it fills a need you really feel, and, moreover, upon whether or not your natural aptitudes, as well as your training and economic situation, fit you to realize that need. Real success and happiness demand a perfect adjustment between the requirements of the occupation and the personal gifts of the worker.

The right choice of an occupation was never more important than it is today. This is the age of specialization, and the man who goes farthest along the road to success is the one who is trained to do some one thing well. But, more than that, in order to meet the crushing competition that even the specialist must encounter, the successful man must have all that enthusiasm and energy which he can get only from doing the work that nature intended him to do.

Everyone has decided likes and dislikes. There are those things which interest us and those which do not. No man, for instance, who has not the urge to spread the word of God and instill His love in the hearts and minds of mankind would ever choose, of his own volition, the pulpit or the missionary field. Yet, there are thousands upon thousands of persons who not only feel no urge for the work in which they engage, but actually hate that work. These people have never succeeded in making the most of their opportunities, and never will succeed. Their own lives and the lives of those dependent on them are made miserable through financial difficulties and through mental and moral dissatisfaction and discontent. The reason why many a man's life is wasted in seeking out the worthless pleasures of the world is because he has not found happiness within the bounds of his work. The world is already too full of these misfits, for whom the careful choice of an occupation might have meant all the difference between success and failure, happiness and wretchedness.

More than a natural leaning toward certain interests is, however, necessary to success. Just as the man without the urge of God within him should never take the pulpit, so no man, no matter how greatly he loved music, should choose the vocation of a composer unless nature had granted him one of her greatest gifts—inborn musical talent. Nor should a man with a frail body choose the military service no matter how much the work appealed to him.

So, in choosing a career, it may be said that there are two primal requisites. In the first place, every man should understand himself. He should know his own natural aptitudes, interests, ambitions, abilities, resources and limitations; and, second, he must know the requirements of a certain occupation, and the conditions under which success may be won in that field. He must know what the duties, advantages, disadvantages, compensations and opportunities for advancement are in that particular occupation, and he must know its social standing, its peculiar demands, and the probable cost of preparation.

One of the most deplorable things in the world is the fact that so many young people expect to drift into a career instead of choosing one deliberately. After all, there is nothing haphazard in the whole universe; every one of God's creations is capable of serving a definite purpose, and it should be one's aim to find out and serve that purpose.

Ask a group of young men—"Why did you choose this occupation?"—and the answers will be:

"Because that was what the other boys did."

"Because I happened to get a job at that trade."

"Because I could make more money at that than at anything else."

Many could not answer this question at all, for the simple reason that they have never chosen a career, but just happened into it, and were without any definite purpose in following it. The impossibility of good results under such circumstances is self-evident. And the great pity of it is that so many people fail to realize that this haphazard choosing may be avoided. There is not a person of ordinary intelligence who cannot examine and question his physical and mental endowments and tell his tendencies of temperament and imagination as well as judge his natural intellectual powers. In short, he can examine everything which goes to make for ultimate success or failure in a particular line of work. He merely needs to be shown how.

Often a man is diverted from his true pursuit by chance, or by the desire or need for immediate financial return. Every man who allows himself to be so turned away must lay aside all hope for future greatness. It is not putting it too strongly to say that it is every man's duty to get into the right place, no matter what the sacrifice in the beginning. He owes it to himself, to his Maker and to those dependent on him to get into the line of work for which nature intended him, and to get there as quickly as possible.

CHAPTER II

MEANS THAT HAVE BEEN EMPLOYED

Man has always unconsciously realized the need of vocational guidance and has employed many means to help him determine what his proper vocation should be. It can be said that the attempt to control a person's future goes back as far as the days of primitive man. Realizing that a person's fortune was dependent on two things—external circumstances and personal characteristics—he attempted to control and influence both of these by crude magical formulas. A little baby would be blessed in order that its life might be successful, and incantations were said over its cradle in order that all harm might be kept away from its door. Often a new-born babe would be dedicated to a certain profession and all its life its relatives would pray for its success in that work. These superstitious people also wore charms to ward off the evil spirits that might bring woe or even death. Great would be the sorrow of parents when some old witch cursed their child, and certain they were that the child would never escape from the dire results of that curse.

It is even possible to find a few persons who still believe in the efficacy of these old forms, and are certain that a person's fortune may be assured or ruined, according to whether or not they appeal to the powers governing all the external forces of life. Superstitious country folk still believe that some strange, occult influence may be exerted which will mold infantile abilities and propensities.

Man came finally to realize, however, that the external forces of life came and went regardless of his desires, or of anyone else's. He came, also, to realize that he was born with certain gifts and without others, and that anything he might do to change these gifts would alter them but slightly. So, instead of merely willing a person's life to follow a certain course, man is found endeavoring to pick out certain signs and symbols which would indicate just what course an individual would follow in the future. The means to this end were also varied—

fortune telling, palmistry, clairvoyance and the reading of horoscopes being the most popular, and considered the most reliable. From the day a baby first lay in his cradle, his every act and movement were carefully watched and analyzed in order that his parents and relatives might have some hint as to what occupation the child should follow when he grew to be a man.

There is no question that many people still believe in the efficacy of horoscopes, palmistry and clairvoyance as a final judge of what their life work should be. Prof. Hollingsworth tells in his "Vocational Psychology" of one fond father who was determined that his son should be a chemist because as a child he had been fond of pouring water from one bottle into another!

Just as reliance on the elements of crude magic was replaced by the slightly more rational reliance on the value of fortune telling and clairvoyance, so this latter belief was superseded by the stage through which we may now be said to be passing. There is no longer an attempt to control destinies by magic or to see the future by clairvoyant means, but our personal gifts are accepted as things over which we have but slight control, and there is an attempt to fit ourselves to enter some line of work for which our natural likes and aptitudes best fit us. Phrenology, physiognomy and vocational psychology are some of the important means through which the attempt has been made to study the individual with this special purpose in mind.

Phrenology.—With the discovery of new medical theories, such as the circulation of the blood; with the perfection of new medical inventions, such as the microscope; and with the development of surgery came an increased interest in the nature of the human body, especially the brain and skull. When science discovered that ability to eat, to sleep, to talk, to move—in fact, the ability to do anything—was controlled by the brain, and that, when certain sections of the brain were removed, the ability to do certain things was taken away, those who had long been searching for a vocational principle to guide them jumped to the conclusion that here was a means by which they could tell just what sort of work every person was fitted to do. They believed that the external features of the skull were a perfect index to the mind and character of the individual.

All such qualities as sociability, sympathy, aggressiveness, perseverance, initiative and some thirty others were supposed to have their special little patch in the brain, and since the skull fitted so closely to the brain, it was thought that the greater the development of each of these qualities the greater would be the corresponding bump on the skull. It was then an easy matter for a person practiced in the art to "read" a person's character with his fingers.

This early "science," called Phrenology, was developed in 1798 by Dr. Franz Joseph Gall, a Viennese surgeon. Dr. Gall started when a youth with noticing the difference in his playmates. His own difficulties in memorizing led him to observe that all persons who were gifted in that way had very prominent eyes. With his interest awakened, Dr. Gall, when a grown man, began independent research, examining many individuals in hospitals, asylums and schools, and especially noticing the heads of those who possessed some quality in marked degree. As a physician to the Hospital for Insane at Vienna he studied the various injuries to the brain. He had plaster and wax casts of skulls made, and he studied the subject continually. In 1800 he was aided in his work by Dr. J. G. Spurzheim, a noted anatomist, who constructed a scalp chart showing some thirty-five definite areas, each of which he associated with some special faculty.

In 1807 a committee appointed by the Paris Institute of Psychological Research reported very unfavorably on phrenologic practices, but Dr. George Combe of Edinburgh became converted to the science and contributed largely to its popularity. Though the early founders of the science were not far astray in some of their surmises, and though the science added much to the discovery of the facts of localization of motor and sensory functions in the brain area, nevertheless the significance of casual observations and of certain specific cases were greatly overestimated and soon gave life to the exaggerated claims of later followers of the science. Phrenological societies developed one after another, and soon the movement became entirely independent of scientific research.

Those who claim phrenology today as a science whereby character may be judged have outgrown the old system of bumps and hollows on a man's head. Nowadays the phrenologist judges character by head shape, and the relative proportions of each faculty are judged by measuring from the center of the brain. For instance, a person with a long head is supposed to manifest great mental activity, great powers of concentration and foresight. A wide head is supposed to denote aggressiveness and combativeness, while a man with a round head is likely to be a reckless person, apt to act on impulse. A man who has a retreating upper forehead is not considered likely to be a thinker or writer. If he has a narrow depressed forehead he has no genius for invention, scientific study or mechanical construction. The phrenologist believes that no talents may be contained in the head of a man which measures less than 20 inches around the base of the brain, while a man with a head measuring 22 to 25 inches must be very intellectual. Napoleon is supposed to have had the largest head in France, but there is some doubt whether all large-headed men are destined to be Napoleons!

The phrenologists of today have differed very little from Gall and Spurzheim in charting off the head. They have merely added a few faculties and so made the brain a more complex structure. For instance, the forehead is divided into three distinct portions. If, so phrenology teaches, one's forehead is developed prominently over the eyebrows, then that person is more practical than theoretical, and should be found in those occupations where a store of ready knowledge, as well as quick and practical thought, is necessary. If the middle portion of the forehead is well developed, giving a curved expression to the brow, the person will have good memory for all sorts of facts, and should make a good journalist or historian. On the other hand, if this portion recedes, the person will be one who thinks and observes well, but will never retain what he learns. With a bulging upper part to the forehead, one has great reasoning power. This sort of forehead is supposed to be found on inventors, philosophers, analysts and all who are discriminating and critical. A low, small forehead is supposed to be found on people with dull intellect, while those who have a forehead well constructed in all these three parts—high, broad and deep—will be brilliant in every way.

Just as the forehead is so minutely patterned off, so the head is divided and subdivided. Some of the main characteristics will be taken up here and their locations studied. There is "individuality," which is the faculty of noticing things. The person who can tell all about a stranger's appearance after a first meeting is a person with this faculty well developed. The phrenologists locate this faculty near the root of the nose, directly back of the eyes. On each side of this is located the ability to remember. Its development to a great extent is supposed to push the eyes far apart and to cause an appearance of swelling on each side of the root of the nose. Such a faculty would, of course, be desirable in almost any occupation.

Just back of the center of the eyebrows is supposed to be found the faculty of distinguishing color. A surprising number of people are color-blind and the phrenologist would say that a person with a small "color" bump could never succeed as a painter, a trainman or an artist. The man who has a place for everything and wants everything in its place is supposed to keep this characteristic hidden behind the outer angle of his eyebrows. Persons lacking in this quality would be found impossible in occupations requiring neatness as a first requisite, as they would lack system and regularity.

Mathematicians, accountants, bookkeepers and merchants require the ability to calculate. According to phrenologists, this ability is located directly back of the angle of the eye, and if well developed, gives a squareness to that part of the face. So the lower part of the brow is neatly mapped off and the second and third stories are likewise tabulated. Memory, musical ability, talkativeness, benevolence, constructiveness, ideality, wit, justice, hope, secretiveness, veneration, acquisitiveness, combativeness, ambition, caution, and so forth are all given their place in the brain area and can be located with the aid of a phrenological chart. For instance, Ambition is located as above and behind Caution and on each side of Self-esteem, while Secretiveness is located as above Destructiveness and backward from Acquisitiveness.

Phrenologists also judge character by the shape of the skull. So again the phrenologist classifies men as having a high, low, narrow, wide, long or short head. If the head is high over the ears, it shows the predominance of benevolence, ideality, hope, conscientiousness, self-esteem, honesty, ambition and self-control. A person with these qualities, the phrenologist would contend, could succeed in the ministry, in law, in teaching and in medicine. The low head shows the opposite of all these characteristics. Such a person is materialistic instead of spiritual and, if such a head is broad at the eyebrows, selfishness is added to that personality.

A long-headed person is one whose head measures greatly from the ear backwards. Such people are described as sociable, strong lovers and persevering. A politician is represented as needing these qualities. A person with a short head has the opposite characteristics, is not friendly and seldom looks to the future.

Present-day phrenologists are still in error. They have discarded the most palpable fallacy of their belief—that the skull could show the development of the areas in the brain—but they have not adapted their theory to scientific facts any further than this. The modern psychologist and the medical man do not admit that the various mental qualities have definite locations in the brain; if they have, the locations are unknown. Nor does the skull conform to the shape of the brain, as it varies in thickness and is separated from the brain by three membranes. Furthermore, the phrenologist seems to ignore the fact that a mental quality is relative; for instance, one cannot measure the honesty of a man who scrupulously guards the financial interests of his clients but does not hesitate to swear off his personal tax. Science has not yet definitely settled the position of functions at all. Functions are simply controlled from the brain through the medium of nerves, so that generosity does not depend on a development of any special part of the brain or body, but upon the characteristic type of reaction which the person displays to a given situation. Besides this, the phrenologists have erred in taking a few striking cases and using them as the grounds for wide generalization. The system not only is inadequate but is apt to lead to miscalculation. For instance, the size of the brain is said to be a measure of intellectual power. Socrates, Lloyd George, Wilson, Roosevelt and Edison are pointed out as men with large heads. But many criminals and imbeciles have large heads. The phrenologist responds, to this, that other things have to be taken into consideration. There must be tests of coloring, health, education, and so forth. Often a teacher or thinker measures little around the head, and the phrenologist retorts that the shape as well as the size of the head must be considered. So, even if the phrenologist could prove that the foundations of his "science" were sound, the application would become so complicated as to be impracticable for ordinary purposes.

Physiognomy.—Phrenological practices still persist, and those who reap gains from their application try to justify themselves by saying that they do not depend entirely on a reading of the skull, but rely on body characteristics as well. The art of reading character from external appearances is known as "physiognomy." This art is founded on the belief that has long prevailed—that there is an intimate connection between the features and expressions of the face and the qualities and habits of the mind.

Aristotle, the great Greek philosopher (384–322 B. C.) detected in man some of the qualities of animals which he resembles. This theory was developed and illustrated by the French painter, Lebrun, in the seventeenth century. Lavater, a Swiss poet and theologian, was the first man to develop an elaborate system of physiognomy, the scope of which has now been enlarged so as to include all the relations between the physical and the moral and mental characteristics of man.

Physiognomy comes before phrenology historically, but in the early days it was considered a form of witchcraft and persons practicing it were much discredited. For instance, in 1597 an English law provided that "all persons fayning a knowledge of Physiognomie should be liable to be stripped and openly whipped until the body be bloudye." But when the older science came to be used to bolster up the newer science, it took on fresh life.

First of all, the physiognomist would classify a person as a fat man, a thin man or a man of mental type. According to this catalog the fat man loves the good things of life and will demand a leisurely existence. Fat men are amiable, candid and practical and are more successful as business men than as students. They are usually shrewd and learn from observation rather than from study. Famous judges, politicians, organizers and executives show a tendency toward roundness in their entire structure. Ex-President Taft would be given as an example of this type.

On the other hand, the man who is made up of muscle and bone, or the thin, wiry type of man, who has a square head, large frame, prominent features and high cheek bones, is apt to embody a certain toughness and perseverance of character; and such a person should follow a line of work requiring great activity and forcefulness. The physiognomist would catalog these men as workers rather than thinkers—men who would excel in mechanical work and executive positions. These men are the born leaders of the world. President Lincoln would be cited as an example of this type.

Then the mental type would be presented—or the man of brains. He has a high forehead and a narrow jaw and chin, which cause his face to appear triangular. The body of such a man is often frail and the hands and features are delicate. He is apt to be found studious, idealistic, highly intellectual, sensitive and refined. He would rather study and think than do manual labor, and is noted for clearness, precision and mental alertness. This is the type that does everything intensely, whether it be to love, enjoy or suffer. President Wilson would be shown you as a splendid example of the type of man known as the mental type.

Then there are the distinctions which the physiognomist makes between the blond and the brunette. The blond is supposed to possess such qualities as lack of endurance, blind optimism, fickleness, positiveness and a disposition to domineer. On the other hand, he is quick, practical, active, creative, enthusiastic, energetic and sociable, and the physiognomist would tell him that his success lay in such occupations as manufacturing, selling, politics, advertising, organizing and construction.

The brunette is described as more prone to melancholy and pessimism, with a certain lack of initiative, some superstition and no great sociability. Nevertheless, we are told, he is serious, long-enduring, careful and dependable, and would do best in following such occupations as art, music, research work, philosophy, agriculture or clerical work.

The texture of skin, hair and features is also made the basis for classification. Thus, a man with coarse skin, coarse hair and heavy features is said to be the type of man who should do heavy work and would succeed best in handling heavy tools and implements. Cowboys, miners and steel constructors are given as examples. But a man with fine hair, soft, fine skin and delicate features is thought to have happy, quick and easy mental processes. Such a person would be acute and responsive and easily affected by his surroundings. The physiognomist would place him at beautiful, delicate work, whether it were literary, artistic or scientific.

Shake hands with a person, the physiognomist tells you. If the handshake is flabby and offers no pressure, it is the hand of the idler and dreamer, who will always seek mental and physical luxury but will do little himself to gain them. Such people are described as easily influenced and often cunning in obtaining their desires. When a man shakes hands with a firm grip, as if he were really glad to see you, then it will be found that he is a person with alertness and vim and one who is apt to be resourceful, progressive and generous. But beware of the hard-handed man—he is a hard individual. Though he may be energetic and hard-working, his tendencies lead to narrow-mindedness, miserliness and often to mercilessness.

All features have their particular meaning. There is the weak chin and the strong chin. A person with a receding chin is supposed to be timid and afraid, and not of very high moral standards. If the chin is square and prominent, its owner would be characterized as courageous and of long endurance. If the eye is well formed and placed, and the face is broad across the eyes, that person is supposed to have the faculty of observation well developed. The furtive, shifting eye is supposed to denote criminal tendencies. A snub nose is a sign that its owner lacks firmness, and is somewhat lax in morals. If the nostrils are broad, it is a sign of an energetic, combative nature combined with selfishness and strength. The narrow nostrils are supposed to show a lack of energy and sometimes a weak mentality. The ear has its own special significance. According to the physiognomist, all people of great intelligence, philosophers and people inclined to bookishness have ears wide at the top and pointed at the bottom. A person who loves the out-of-doors and is able to do active and executive work has a square ear. Ears set close to the head show reticence, while large ears indicate the plodder and, if they are long, the person with great tenacity.

Probably one of the commonest guides to character is the lips. If they are firm-looking, the physiognomist will say that it is a sign of a resolute man or woman; if they are weak, and look as if they might easily tremble, the character is apt to be weak and trembling. If they are narrow and compressed, it is a sign of coldness, self-control and industry. If the mouth droops at the corners, it is supposed to indicate pessimism and fault finding, while, if the corners turn upwards, kindness and love of fun is indicated. Too full lips represent indolence and sensuality.

All these physiognomic facts are based on the belief that every action and every thought leave their impress on the brain and, as the face is the mirror of the brain, these thoughts are so transferred to the face and features. It is true that certain characteristic habits of thought and action do leave traces on the face of an individual. Each time one yields to some passion or desire, some trace is left upon the features. Yet character cannot be judged that way. How often the remark is heard that a person with stooped shoulders is a student. While stooped shoulders may be caused by continued studying, it does not necessarily follow that every person whose shoulders are stooped is of a studious frame of mind. A guilty person may be unable to look an honest person in the face, but that does not necessarily mean that every person with a shifting eye is a criminal or even a potential criminal. Nor is an open, honest face always an index of character, as villains often specialize in this appearance.

In short, in so far as physical characteristics result from long-continued habits, and they may so result, they may be considered as guides to moral and mental characteristics, but the dogmatic belief that there are definite relations between typical features and typical inner characteristics is unjustified. That a person is often judged by his looks cannot be denied, nor can it be denied that he is often judged wrong. When the physiognomist is able to judge correctly, it is only because years and years of repeated habit have left their traces on the face and form of the person under examination; but by the time this has happened, it is far too late in life for it to be of any use in determining fitness for any particular vocation. After all, the old expression that one cannot judge a person by appearances is pretty true, and, certainly, the facts of physiognomy are so varying, so extravagant and so contradictory that the person who is looking for a true solution of his vocational problem can use them with little or no confidence.

Vocational Psychology.—Phrenology and physiognomy were of little use in helping to find a way for those who wished to fit themselves for their life work, but they served to call attention toward the fact that every person differs from every other, and that, where characteristics are similar, they are found in varying degrees. Psychologists only reluctantly lent themselves to the purposes of experimental psychology but, when laboratory experiments were begun in earnest, it was discovered that different people reacted differently to similar external conditions; and, from studying a person's behavior under scattered and uncontrolled conditions, it was but a step to studying and tabulating a person's behavior under controlled conditions or certain well-defined tests. The differences that were noted in these tests were differences between sensory and motor discrimination and were not intellectual tests, as these are known today, at all. When the examiner noted individual differences in his subjects, he tabulated these differences under such wide headings as attention, perception, memory, imagination, and so forth.

It was soon found that these fundamental faculties could be greatly divided and subdivided. For instance, a person may come out above the average in a memory test, but his memory for facts may be excellent while his memory for figures may be very poor. So the first step forward was making up and trying out a large number of tests of miscellaneous character, seemingly wholly unrelated and certainly never analyzed. These newer tests, however, were mostly intellectual in their character, and were measurements of speed and accuracy in completing certain tasks set before the subject. Clearly, all these masses of unrelated tests needed coordinating and standardizing, that records might be compared and an average set. Today these early intelligence tests are well organized and fairly uniform in standards, each test having its own "norm," as it is called, marking the ability with which the average person completes that test.

From this point it was but a step to apply the results of these tests to the actual needs of life. The tests themselves were examined, useless and unsatisfactory ones thrown out and a discard of those tests which were considered most easily influenced by external conditions was begun. First, the tests were applied to education. The names Simon and Binet are familiar to almost everyone for their series of general intelligence tests by which school children were graded and the backward pupils separated from the average. Then the tests were applied in medical circles and mental defectives were picked out from normal human beings and sent where they could be cared for without jeopardizing the welfare of the rest of humanity. And, last of all, the results of these tests have been applied as vocational guides.

There are now many types of work in which fitness is determined by certain standardized tests. These tests are slightly different in character. There is the kind of test in which a candidate for a position is given a task involving some of the actual work he will have to do if he obtains that position. For instance, if he is applying for a job as a stenographer or as a clerk he may be given some stenography and typewriting to do, or be given a test in filing.

Then there is the type of test where an attempt is made to reproduce the actual work in miniature or in another form. Apparatus is used in which conditions of actual work are as faithfully reproduced as possible. For example, in the test for telephone operators a small switchboard, closely duplicating all the conditions on an ordinary switchboard, may be used.

There is also the empirical test, for which Prof. Lough is sponsor. In this case persons who are exceptionally good at a certain occupation or exceptionally poor at it are subjected to a vast number of tests. It is found that in certain of these tests the very good person will score very high and the very poor person will score correspondingly low. So, picking out those tests which seem to be related to the particular work, as a standard, all persons desiring to enter that vocation are given these selected tests, and their ability to perform the actual work judged thereby.

The most purely psychological test is one in which no attempt is made to reproduce the conditions or apparatus required by a particular occupation, but the test given is supposed to require the same performance and the same attitude as would the original work. In other words, the attitude and the endeavor required for success in the test will insure success in the occupation.

The above types of test may be divided into two classes, depending on whether or not they are tests of general intelligence or tests of a person's ability to perform certain tasks set before him.

General Intelligence Tests.—After all, what is intelligence? It may be described as the ability of an individual to adjust his thinking to new requirements—mental adaptability to new problems and conditions. So, when it came to giving general intelligence tests, it was a question of testing a person's knowledge of the common things of life, the things an average person with normal intellect would pick up regardless of educational advantages. The abilities of discrimination, comparison, description of things seen or heard, the ability to form words and make them into sentences—all these are picked up more or less instinctively. Take a logical sentence, for instance. A person may know absolutely nothing about logic, but his natural intelligence would enable him to pick out a right conclusion from a wrong one, although he might be unable to tell the reasons for his choice. One of the interesting tests given by the army required the tracing with a pencil of a way through a maze. Average intelligence would enable a person to do this in a reasonable length of time. Yet many a man would trace and retrace over the same path, when his common sense ought to have told him that the reason he retraced from a certain point was because he came across a block!

Some samples of general intelligence tests may be studied. Here is a test for the ability to use collective terms:

What sort of animals would you call horses, cows, pigs and sheep?
What would you call chairs, tables and carpets?
What would you call apples, pears and bananas?
What would you call bricks, mortar and cement?

There is a test known as the "Masselon test" in which one is given a list of words and asked to make sentences out of them within a certain length of time. For instance:

Pipe, match, smoke.
Hunter, dog, gun, rabbit.
Man, wood, coal, stove, dinner.
Money, store, street, beggar, can.

Another type of test is that sponsored by Trabue, and known as the "completion test." In this test a series of sentences is given with blanks where words have been left out. The first sentences are easy, but the list gradually becomes harder. Here are the first two and last sentences from the Trabue Language Scale C:

The sky——blue.
The boy who——hard——does well.
One ought to——great care to——the right——of——, for one who——bad habits——it hard to get away from them.

There is a test known as the "Ziehen test," which determines the ability to discriminate, compare and describe. It asks such questions as:

Tell the difference between a bird and a butterfly—a horse and an ox—wool and linen—a lie and a mistake—silent and mute, and so on.

Another form of completion test is one in which words are given with a letter or letters missing, such as:

Complete the following:

(g)reen
(p)encil
(g)lass
(b)rush
do(ll)ar
c(l)ub
cou(p)on
fa(v)or
pon(y)
brea(d)
proo(f)

Reading backwards and upside down is another good test of general intelligence. The subject is given such words as ralucidneprep and noitacifislaf and ?ereh neeb uoy evah gnol woH. He is also given some printed matter which is upside down and is asked to read it that way. Some individuals read quite readily, but most persons take considerable time to pick out the words and phrases.

A slightly more complicated test is one which tests the ability to comprehend and explain things. For instance, the subject is asked to explain the meaning of familiar quotations such as:

The early bird catches the worm.
A rolling stone gathers no moss.
No man is a hero to his valet.
Who spareth the rod hateth his child.

The logical test has been mentioned before, and it was pointed out that intelligent persons with no knowledge of logic are still able to pick out a correct deduction from an incorrect one. For instance:

All men are fallible; women are not men; therefore women are not fallible.

All Europeans are Caucasians; Caucasians are white; therefore all Europeans are white.

Giving opposites of words and supplying a verb with its object are other tests. Common words, like long, dead, sick, rich, summer, empty, etc., are used in the "opposites test," and in the "verb-object test" such verbs as dig, learn, mend, bake, lock, wash, etc., are used.

The appreciation of absurdities makes another good test of general intelligence. For instance:

A gentleman with his hands behind his back paced the floor reading a paper.

The engineer said the more cars he had on his train, the faster he could go.

Performance Tests.—It was soon found that the test which examined general intelligence through the use of language only had its drawbacks. For instance, there were the persons brought up in foreign-language-speaking homes. These people were not so familiar with the English language as others, and were therefore limited in their ability to reply to language questions; and language is the foundation on which these intelligence tests are based. Deaf people, who never hear language, are also handicapped, though their intelligence may be as great as, or even greater than that of the average person. Besides, some people think and formulate their ideas slowly and, in a test where time counted, this fact would be unfavorable to the subject. So other tests were evolved where language was not a factor, and these tests were known as "performance tests."

In their earliest forms the performance tests were similar to the picture puzzles with which all children are familiar. Pictures with pieces cut out are presented to the subject, who is requested to replace the cut outs. A similar test is one in which five shapes —a square, a pentagon, a cross, a circle and an oval—are cut out of an oblong piece of wood. The pieces removed are further divided and then are to be fitted back into place by the subject. Another test consists of a group of geometrical figures numbered 1, 2, 3, 4, 5. Then, in a series of these figures, each must be numbered properly without access to the original key forms. Cancellation tests are also resorted to, in which a series of numbers are given, one line after another, and one goes through the lines picking out and canceling all the threes or all the fives, as the case may be. This is a test for quick perception. Another test, which is used in industries where quick perception combined with memory is necessary, is one in which the subject is given a number of objects to examine and is then shown about twice as many and asked to pick out those which he had seen before from those which he had not. From simple tests like these, various industries have developed very complex tests of the qualities which that industry requires, and often an expensive and elaborate equipment is necessary for the examination.

Summary.—It has been seen that phrenology and physiognomy are valueless. Phrenology is useless, because it is based on unsupported scientific facts; it has taken a few striking cases which seem to support its claims and from them has developed a set of empirical and almost ridiculous generalizations which everyday life refutes time and again; and, lastly, because the various claims are so varying and so complicated that, even if based on scientific truths, it would be impossible for the average person to use them intelligently. Physiognomy, too, is valueless, because the face mirrors thoughts and habits only after years of repetition, and it is then too late for it to be of any use in vocational guidance, assuming even that a correct reading could be made. But the facts are too varying to be reliable, and the habit of generalizing from specific cases is as misleading as in the case of phrenology. Like magic, palmistry, clairvoyance and horoscopes, phrenology and physiognomy are valueless except as historical studies showing the origin of the present-day systems of character analysis.

Looking into the mirror at one's face will not help solve life's problems. Some young people may lack certain qualities which they can cultivate, but they must know what they are. Observation may be deficient, love of work may languish, patience and perseverance may be wanting, but they may be improved when a person knows in what he must improve. It is not the face that reveals all the shortcomings of character, or all the merits of soul, but it is the inward knowledge of what a person possesses. It is almost indispensable to know whether to use check or spur, and when or where. To exercise to the full one's own talents is the best way to prosper, and a man must avail himself of the opportunities that come to him in life, regardless of what the mirror may tell him.

The weakness of psychological tests has also been shown. Reliable tests eliminating all possibility of injustice to the individual are yet to be perfected. Psychologists have not yet been able to reproduce in the laboratory the same attitude and the same mental responses as would be produced in actual work. Some people are quick in their mental processes; others are slow. So many psychological tests require a time limit that the final results are not indicative of true intelligence. The person known as a plodder, who thinks and plans carefully before he speaks, will rate low in such tests, while the person who thinks quickly, but without reasoning—the person who is superficially clever—is likely to rate high. As a matter of fact, the general intelligence of the slow person may be higher than that of the quick thinker, and he would be more dependable in actual work than the "clever" person. Besides this, there are persons of nervous temperament, to whom the very word "test" is disquieting. They become so excited and apprehensive that the result of their test is not a true guide to their abilities under ordinary circumstances. On the other hand, there is the person who enjoys a test and is stimulated by it. This person would do better work while under examination than he would do afterwards in actual work.

The power of attention plays a big part in vocational accomplishment. With a fresh mind and a set task to be accomplished only once, the result may be highly gratifying; but when it comes to actual work, and the person is forced to repeat the same processes day after day, great variation may be found between his accomplishment under test and his accomplishment in actual work. Some will work better under routine, while others will fall off, become restless and eventually be forced to give up the work altogether. Human nature is far too complicated to be readily brought under the measurements of psychology, and tabulated and indexed like the operations of a machine. Much has been accomplished, and much more will undoubtedly be accomplished along this line, now that psychologists themselves have begun to realize the shortcomings of their own work. But for the time being, one cannot rely to any great extent on vocational psychology; one can only trust that eventually the hopes of its advocates will be realized, and that a solution of the vocational problem through psychology may result.

In the meantime other and perhaps more prosaic means of determining occupational fitness and promise will have to be relied upon.[1]

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[1] The above is merely an outline of the subjects covered, but is sufficient for the present purpose. The student who wishes to go more deeply into the studies outlined is directed to the bibliography on page 70.

CHAPTER III

HOW TO CHOOSE YOUR VOCATION

You have briefly studied the principles of phrenology, physiognomy and vocational psychology and have found them of little or no value as guides to help you find your way into the right vocation. You have found that phrenology and physiognomy are almost entirely discredited, and that the principles of vocational psychology are so new and uncertain, as they stand at the present time, that their value may be seriously questioned. Yet your problem of selecting the work for which nature has fitted you, and in which you are most likely to meet contentment and success, is as important as ever.

The fact remains that it is better to choose the work in which you are to engage than merely to go out and hunt for any sort of job, taking the first that is offered to you. The fact also remains that no one can choose a vocation unless he has first made a systematic study not only of himself, but also of the various occupations which may be open to him. Since it has been seen that no reliance can be placed on the means that have been employed in the past, how is the choice to be made?

The task is not easy. In the early days, when the young man could count on the fortune teller or the clairvoyant or upon those who claimed that they could, by the methods of physiognomy or phrenology, tell him just what characteristics he possessed and just what line of work he should follow, he had little or nothing to do for himself; but now that he must rely chiefly upon himself in making this study and choice he must give the matter considerable time and study. The basic thing that is required is knowledge. First, you must make a serious study of yourself; that done, you must make a careful study of the various occupations; and then you must compare the requirements of the occupations studied with the qualities you possess and, by a process of elimination, come to a final conclusion as to the work in which you are most likely to find success and happiness.

First, consider the necessity of a clear knowledge of self. That was all the physiognomist or the phrenologist claimed to do—to judge, from your physical characteristics, just what your mental and moral characteristics were. Once you had learned what these characteristics were, you were supposed to know just what kind of work you could do and just what kind you could not do.

Now it is necessary that you think over these characteristics yourself. You, better than anyone else, are able to say whether you have a mechanical turn of mind, or are "unable to drive a nail straight"; whether you prefer to mix with other people, or prefer to work and be alone. You know whether you are good at figures, or whether you are good in languages. You know whether or not you have a good memory for facts, faces or figures. You know whether you find it utterly impossible to do any sort of work when you have to accomplish it under pressure and excitement, but that you do your work perfectly and neatly when you have plenty of time and can plod along in your own deliberate way. You know whether you hate to be ordered around by your associates, or whether you rather like to have the other fellow assume responsibility. You know whether you like to do things on your own initiative, or whether you prefer to have someone else map out the plans for you to follow.

All these things you know in a vague sort of way—these are your natural characteristics and tendencies and these are the things which must determine what kind of work you should follow. Since you already know these things in a way, it is just a question of getting them down in some sort of ordered form, so that you may see and study them all at once and get a "bird's-eye view" of the whole *you*. It is not enough to know the kind of characteristics you possess—whether you are quick or slow in your mental or physical processes—whether you are hasty and impulsive in your actions, or whether you act deliberately and only after deep thought and consideration—whether you are tactful, or whether you are blunt—and so on through the entire category; but you must also know the kind of things you like to do as compared with the things you do not like to do. Though you may possess mechanical ability to a high degree, the idea of becoming a mechanic may not appeal to you at all. Though you may be able to lead the other fellows in various games, it may give you no great pleasure to do so; in fact, it may even be distasteful to you to exercise your powers of leadership.

After all, your likes and dislikes must be one of your strongest guides in choosing your profession.

You must form some idea as to what your ultimate ambition is. Without a star to guide you, it is very unlikely that you will ever reach your port. Ask yourself the question: "Do I want to be a leader of men—a great statesman, a great politician, perhaps even the President of this great country?" Do not be ashamed of your ambition either because it seems too high or not high enough—pure contentment is the best pay in the long run. Again ask yourself: "Will I get more happiness out of doing absolutely methodical work—the same thing day after day, but knowing that I am an important cog in the wheel and that without me the great machine must stop until I can be replaced?" Or perhaps you would get the greatest returns in doing some work which would be of service to the community, but which would give you personally only a comfortable living. To some people the idea of public prominence is strong; to others the idea is repugnant; while there are many who do not think of self at all, but only of the good they can do for those about them. For instance, you may feel that you can do the greatest good as a country doctor—or perhaps as a minister. Whatever it is, have your ultimate ambition clearly in mind, and it will be just that much easier to work constantly toward that goal. There are so many conflicting human characteristics that to "know thyself" will be no easy matter. Perhaps you have the ambition to become a teacher. You may have the education, the power of instilling knowledge in others—everything that goes to make a good teacher—but you are entirely lacking in patience, and feel that you can never acquire it. Your plans must all fall to the ground, for the ability to teach must be founded on the ability to put up with foolish mistakes, to go over the same ground again and again, to put yourself in the other person's place and rarely to lose your temper. Those who would control others must first control themselves. So you see how necessary it is that the knowledge of self be based on a deep and serious and systematic study of all your aptitudes, interests, ambitions, abilities, resources and limitations.

But it is not enough to know yourself—you must also know the various occupations just as thoroughly, in order that you may compare the requirements of the work with what you have to offer your work. How often a boy refuses to go into his father's business because he knows it too well—knows all its "outs" and can see too clearly its hardships. Yet he will select another business for himself about which he knows practically nothing but its illusions, and is sure to meet with disappointment when he finds that this business, too, has its "outs" as well as its "ins," its hardships as well as its pleasures. How much better it would be if you studied all of the important occupations which interest you, in order to learn just what the requirements of each of these vocations are.

You should first make a general survey of the field of vocations and then make a definite study of those in which you are most interested. It is only in this way that you can weed out those for which you are not fitted from those for which you are fitted. It is far better to know the requirements of a vocation before you enter it than to run up against unexpected difficulties after you have made your choice. This can lead only to bitter disappointment and disillusionment and is apt to turn you into a "rolling stone" who is never satisfied anywhere. You should know all the requirements of each vocation in order to see whether you can meet them. The occupation of a carpenter may appeal to you—you may seem to have all the natural characteristics: mechanical skill, drawing ability, ability to handle tools, ability to follow plans, knowledge of the proper material to use in each particular case; but there is one thing more that carpentry requires, and that is physical strength and endurance—the ability to handle heavy material and to work on high scaffolds—without which your field of activity in carpentry is likely to be very limited, and your chances of success, therefore, small. It is true that a frail body may be built up, but there is a limit to what may be done in that direction. The same talents might be better employed in a less arduous occupation, such as model or pattern making, for instance.

It is also necessary that you should know the sacrifices you may have to make in order to gain success in any vocation. For instance, if you desire to be a doctor, it is better to know beforehand that you will have no time to call your own, no time in which you can settle down with your family for a few hours, certain of uninterrupted peace. You should know that you must always be ready to go out, no matter what the hour, or what the weather, just because one of your patients needs you. You should also know under what conditions success is won in certain occupations—whether it is through work alone or whether it is through the cultivation of influential friends, as would be the case with the man who desired political prominence. You should know the advantages and disadvantages of the work. Some callings repay the individual little in a purely financial sense, but place him high on the social scale—as, for instance, officers of the army and navy. These men receive little in the way of pay, but the homes of cultivated people are always open to them. Again, take the vocation of teaching in which the remuneration is very small compared to the amount of work that goes into such a calling—yet many a teacher or a professor considers himself well paid either because of the chance it gives him to go on with his own education, or the contentment he receives from guiding and molding the future of youth, and so the future of the nation. Still another point which should be taken into consideration is the amount of good which certain occupations do in the community. Social service workers glory in their work, just as missionaries find pleasure in theirs, because they know that they are working where they are doing the greatest good for the greatest number; yet the pay of both of these types of workers is small indeed.

It is better to learn of the disadvantages of an occupation before you enter it than to stumble across them after you have started, and be forced to give up in despair. It is better to know just what educational requirements are needed in order to gain success in an occupation than to enter it and find that you cannot cope with your competitors because you have not had the educational advantages which they have had.

Another thing which deserves consideration when studying the various occupations is the opportunity for advancement. In considering any work it should always be with an eye to the future. The compensation you receive at first is not as important as your future prospects. Avoid occupations in which there are absolutely no outlets—"blind-alley jobs," they are called—if you wish to attain real success. The position of clerk has often been considered an example of this type, but this is not invariably true, for in many offices the man with the proper training and the proper ambition can find his way to better things, provided he does not sink into the rut of routine.

Just as, in the study of self, there are many and varied conclusions, so there are many sides to every occupation; and you must study and consider them all carefully and systematically, so that you will have a complete idea of the entire occupation—its requirements and the conditions under which you may win success, its advantages and disadvantages, its compensations, opportunities and prospects. It is only through a careful study and tabulation of facts about yourself and the various occupations that you will be able to make a comparison and gradually eliminate those for which you are not fitted from those for which you are fitted.

It is not enough that you should consider all your qualifications, but they must be put down in black and white where you can refer to them and find them in consecutive and well-tabulated order. The best method of doing this is through the questionnaire, which will be taken up later.

Self-analysis.—Probably most people who have chosen a vocation have resorted to self-analysis in a vague way. Perhaps you have said to yourself that you would like to be a doctor, a carpenter or an engineer, or whatever the case may be, because, half instinctively, you have studied yourself and decided that you have the qualities which such a vocation would require. The study, of course, has been superficial and you cannot really know that you do possess all the qualifications demanded by that vocation, largely because you do not know what these requirements are. But the superficial analysis has been helpful in its way; how much more useful would a systematic self-analysis be, where tabulated results in both cases might be compared.

Systematic self-analysis is best accomplished under favorable conditions. You must go off where you will be undisturbed and study yourself as if you were another person. It is not easy to detach yourself entirely from your own personality—to praise and to condemn—but it is absolutely necessary that you do this. You may think it is time wasted, for, in order to study yourself truly and honestly, you must spend considerable time and thought upon the problem; but if you could only look into the future and see all the time it will save you, you would not begrudge a minute spent on self-analysis. Just consider the time you would ordinarily spend in trying to find the right place. It is only natural that, if you have not studied yourself, you will have to make a considerable number of changes before you are satisfied with the work you are doing. This alone should convince you that it is better to spend a little time and labor in the beginning, and not only save time in the long run, but win happiness and contentment along with it.

Putting It Down on Paper.—If only we had the power of seeing ourselves as others see us, the problem of self-analysis would not be so difficult. Since that power is denied us, the best we can do is, after a careful study of self, to put all our findings down in black and white. If you put these opinions about yourself down on paper, you will clarify and make orderly the fleeting thoughts you have when, half instinctively, you feel drawn toward an occupation. You cannot judge yourself as a whole being unless you can see every one of your characteristics put down in orderly formation and are thus able to balance one against the other and come to a final conclusion. You may say: "This is very foolish, putting all this down on paper. I knew it all before, and writing it down won't make me know any more about myself than I did before." But putting things down on paper clarifies your own ideas about yourself, makes you stop to think and consider more deeply than you would do with only a mental examination and may even lead to a conclusion far different from the one you would expect, provided the whole thing is backed by an honest examination. It is only after you have put these various characteristics and qualities down on paper in answer to pertinent questions that you can safely compare them with the requirements of the various vocations.

Suppose you have down on one side of the ledger—the personal side—such items as these:

1. Love outdoor life, hate indoor life.
2. Hate the sciences, love mathematics.
3. Have had good industrial training.
4. Not happy unless I can be at the head of things and bossing everybody.
5. Like to work with my hands but dislike mental activity.

And so on for many items. Now on the other side of the ledger you will have down in black and white every item that a certain vocation requires. For example, take agriculture:

1. Love of the outdoors.
2. Scientific knowledge.
3. Physical endurance.
4. The ability to direct and initiate.
5. Knowledge of markets, etc.

With these various qualities down in black and white, it will be a comparatively easy matter for you to go down the list, comparing and crossing out—taking each vocation that has appealed to you in turn, until you come to one in which the qualifications and your requirements are alike, or at least where the strength of one quality you have to offer is sufficient to outweigh your lack of another. Taking the example above, the weakness may lie in the fact that you dislike scientific studies. Otherwise, let us say, you fit in with all the requirements. Now if your love of nature and the great outdoors is sufficient, it may outweigh the necessity of your liking the scientific end of farming. After all, there are some things which you can have done for you, provided your love of "bossing the situation" is not so strong as to make it impossible for you to accept advice. On the other hand, as has been pointed out elsewhere, there are some qualities which you absolutely must possess in order to succeed in certain positions, such as the understanding and love of mathematics, if your desire is to become a great engineer. You may have all the other requirements—love of the outdoors, hardihood, ingenuity, and so forth—but without the cornerstone of mathematics you may as well not enter the profession if you are desirous of making a big success of it.

This seems getting a long way from "putting it down on paper," but it is only through this process that you can make the proper comparisons and eliminations. Putting it down on paper has another advantage—it will show you how little you really can say, with perfect assurance that you are right, about yourself, and will, in turn, insure a more careful study which can never fail to be helpful to you and may even reveal some characteristics which you never realized you possessed before. Putting things down on paper, simple as that may seem, is of greatest importance in giving you a definite guide and plan, always permanent in its character, to which you can turn in time of need or when you have begun the work you chose and find yourself doubting your choice. With a rereading, you will strengthen your certainty that you were right, and find a means of helping you over the rough places, with the assurance that all will be right in the end. The things you put down on paper will mark the beginning or starting point—you can almost call them the blue prints from which you are to build your structure—a successful career.

Questions for Self-analysis.—Questions for self-analysis have been proposed by the thousand. While it is desirable for you to examine yourself from every conceivable angle, too many questions may easily lead to confusion and result in defeating the purpose for which they are intended. You will find the following questionnaire short, concise and to the point. Each question has been framed with the definite idea in mind that the answer you make to it will shed a pointed light on the problem of just what sort of vocation you should follow and just what sort of vocation you should avoid. For instance, the question of what studies interested you most when in school has a distinct bearing on your future vocation. If you were fond of the literature courses, and always wrote good themes, then, perhaps, other things being favorable, you may make a success as a teacher or a journalist, or even a novelist. Perhaps you disliked the science courses particularly; in that case you should avoid all occupations where scientific knowledge underlies the foundation of success in that line. Again, a distinct liking and aptitude for mathematics may turn you to some profession based primarily on mathematical calculations. And so you might go through all the list, tracing the importance of each question and its bearing on your vocational problem.

Some of the questions may be answered definitely and directly; others, especially those regarding character, are more complex and the answers may be more or less uncertain and imperfect. However, do the best you can, and the result cannot fail to be of distinct advantage as a guide in choosing your occupation. Before you answer a question, consider it carefully, and try to form a good judgment upon it. If necessary, state the facts upon which you base your answer. Above all things, be truthful. Remember that what you are doing is for your own benefit and for no one else's—so you can fool no one but yourself. In some questions it will look as if you must answer them only one way, or show that you are unfitted to undertake any work. For instance, take the question of whether you are enthusiastic or not. It would seem that, if you were not enthusiastic, that fact must count against you. But all kinds of occupations require all kinds of workers and there are some types of work where too much enthusiasm, instead of the calm, easy-going nature of the unenthusiastic person, would be fatal to success, as well as fatal to your happiness. So, first and foremost, be honest with yourself.

Remember that the correct answer to each question may be measured in dollars and cents as well as in increased happiness and contentment. No man is more successful than the man who succeeds in the work which he loves and for which nature has fitted him. Try, in answering these questions, to detach yourself from your own personality and look upon yourself as some strange person whom you have never seen before. In some questions you will find that it will help you to judge your own value if you compare yourself with other persons who you know possess that trait in marked degree. In answer to the question of persistency, for example, think over your school acquaintances and ask yourself: "Who gets tired of working or of playing a game or of doing anything first—myself or the other fellow?" Then, consider and compare yourself with the other pupils when the teacher tests your memory by asking some question, the answer to which he has told you long before, and which you tucked away in your brain. Are you the one who recalls it, or is the other fellow who raises his hand? Whether it is a question of carefulness, punctuality, reliability or what not, always compare yourself with the best person you know with reference to these qualities. Do not overestimate and do not underestimate your abilities. There is work for almost any man, provided only that he is ambitious, honest and of good moral character.

Take this questionnaire off into a room where you can be absolutely alone and sure of no disturbance. It is only through consecutive thought that you will reap any benefits from filling it out. Be sure that you understand just what is expected of you and just how you are going to do it. Have a pencil and plenty of paper with you. Do not glance over the entire questionnaire, but concentrate on one question at a time, giving a full and complete answer before passing on to the next. If, after trying very hard, you find that you are still unable to answer a certain question satisfactorily, leave it and pass on to the next. Your answers to subsequent questions may help you to answer the troublesome one later. Clear your mind of all other thoughts and considerations. You must concentrate on what you are doing. Remember what the correct answering of the questions is going to mean to you.

When you have thought a question over carefully and decided upon your answer, put the number of the question down on your paper and write your answer clearly, concisely and legibly. Take the question: "*What claimed most of your attention in school, your studies or outside interests?*" Think the matter over carefully. Did your studies come first or did that game of basketball? If you did spend more time in your studies, was it because you enjoyed studying or because your parents forced you to, or because of the desire to stand ahead of everyone else? Think it all out and answer honestly. Business and professional life hold positions both for the student and for the man who is socially inclined and dislikes the confining atmosphere of study. Again, take the question: "Do you get along well with other people and they with you?" This is another question which will require thought. If you are always running around with "the gang," is it because you push yourself into it, or does the gang run after you? Are people really glad to see you, or is it a forced greeting? If you do not mix well, study the cause and give it. Do you prefer to be alone in most things and so avoid company, or are you "hail-fellow-well-met" with everybody? Go through each question that way, asking yourself all these little side questions and, when you write your answer, put down the reason for it, if the answer is one that requires, or is simplified by, a reason.

QUESTIONNAIRE FOR SELF-ANALYSIS

1. Name. Date.
2. Age.
3. Occupation of parent or guardian.
4. Occupations of other relatives which have interested you.
5. What schooling have you had?
6. Have you had any special industrial or commercial training? If so, what?
7. What studies interest you most?
8. What studies do you dislike most?
9. Are you studious by nature, or does studying come hard to you?
10. What claims most of your attention in school—your studies or outside activities, social, athletic, etc.?
11. What sort of books, magazines, etc. do you read?
12. How do you spend your spare time?
13. Do you "get by" in school with little or no study, or do you have to "plug hard" in order to pass?
14. Do you like to invent things or devise improvements on things around you?
15. Have you mechanical ability?
16. Do you like to draw? Free-hand? Mechanical?

17. Do you like music? What instrument do you play, if any?
18. Do you express yourself well in writing? In speech?
19. Are you timid, a "go-getter" or neither?
20. Have you a hobby that makes large demands upon your spare time? If so, name it, and try to give reasons for its strong appeal.
21. To what organisations do you belong, if any?
22. Do you take an active part in club meetings or on similar occasions, or do you prefer to leave that to others?
23. Are you a "good mixer"?
24. Have you any particular ambition or vision for the future?
25. Are you naturally healthy?
26. Are you strong physically?
27. Name physical handicaps, if any.
28. Do you prefer to be the director of things, or are you willing to do your share while someone else directs and assumes responsibility?
29. Are you able to concentrate on the work you are doing, or does your mind wander off to other things?
30. Do you get along well with others and they with you?
31. Do you stick to an idea or to a certain job until the end, or are you easily discouraged?
32. Which sort of work appeals to you most—methodical, repetition or work of wide variety?
33. Do you prefer mental activity, physical activity or work involving both?
34. Can you work well under high pressure, or do you work better when you have time and leisure?
35. Have you a good imagination?
36. Do you naturally pay attention to small details, or are you more interested in broad planning without giving much thought to methods of carrying out your plans?
37. Have you a good memory for names? . . . For faces? . . . For facts? . . . For figures?
38. Do you keep your desk or room always in order, or do you allow things to accumulate until you are forced to clean up?
39. Are you systematic in your work, or otherwise?
40. Are you self-reliant?
41. Are you tactful, or do you say what you think without consideration of effect?
42. Are you careful and conservative in taking a step, or are you impulsive and careless of consequences?
43. Are you quick or slow in your movements? . . . In your mental processes?
44. Are you talkative, or taciturn and a good listener?
45. Do you grasp an explanation quickly, or do things have to be explained to you in detail?
46. Do you insist on accuracy and perfection in everything, or are you satisfied with "good enough"?

47. Do you take pride in your personal appearance, or are you careless or indifferent?
48. Do you enjoy meeting strangers?
49. Are you happiest when you are busy, or do you enjoy your leisure most?
50. Do you prefer to be indoors or outdoors?

CHAPTER IV

STUDY OF VOCATIONS

After filling out the questionnaire, you ought to have a pretty fair idea of just what sort of characteristics you possess, just what qualities in your nature are strongest and what you would be able to offer to the occupation you choose. But, no matter how well acquainted you have become with yourself—your likes and dislikes, abilities and inabilities, when taken as a whole—this knowledge is not sufficient to enable you to make your choice, because you probably have no idea—or, at best, but a faint idea—as to just what line of work these qualities, likes and dislikes, ambitions and the rest will fit into. In order to fit the right person to the right job, it is necessary to know both person and job. Once you have studied an occupation to know whether it requires mathematical or scientific ability, executive ability or the ability to follow someone else's lead; whether hasty, impulsive actions would be fatal to success or harmless or helpful; whether you will be required to be a good talker or not—when you have learned all of these things, you will then be able to begin the process of elimination and cancellation, comparing each quality you possess or lack with the special requirements of each vocation, until you find the place where requirements and personal characteristics coincide.

It is easy enough to learn what the broad, general requirements of an occupation are; the part which is difficult is to learn what the less obvious requirements are, the unexpected demands which lie hidden under the surface and are not suspected by the world at large, and will not be suspected by you until you begin to study that occupation in all seriousness and earnestness. It is not the apparent demands of an occupation which disappoint the worker when once he enters upon its duties. If he determines to be a journalist, it will be perfectly obvious to him that he must be able to express himself fluently and quickly; must know the elements that constitute news; must know the technical "ins and outs" of news writing, which is different from any other kind of writing; that he must like the uncertainty of the life of a newspaper man, who can call no time his own, and must always be at the beck and call of his editor, who can send him wherever he pleases whenever he pleases. These are not the things that will disappoint the young newspaper worker when he first enters a newspaper office. The things that will disappoint him—unless he knows that he must meet them and has qualified himself to cope with them—are such things as the necessity for "butting in" when he is not wanted, and of always being able to keep a stiff upper lip when he cannot get the information he wants; or the grim determination that all newspaper workers must have, to get the "stuff" or die in the attempt. If one source fails him, he must go to another, and so on down the line until he is satisfied and can, bit by bit, piece his article together. Or again, you may be well fitted in every obvious way to do newspaper work, except in the ability to get along with strangers. A certain sincerity, a certain pleasing personality, is necessary to the newspaper man who would find his way into the offices of big men who refuse to see others. He must be able to cajole office boys into letting him into the sanctum of the big boss and, once he is within the threshold, he must be able to wheedle the story out of the big man. In these little things will lie your success as a newspaper man; without them, all the ability to write, all the knowledge of technique, all your training—everything—will be of no use whatever. So it is in order to learn of these small, obscure, but all-important, requirements that you must study the various vocations just as thoroughly as you have studied yourself.

There are other things for which you must make a study of vocations; for instance, the amount of training they require. It is useless to enter a vocation if you have not the proper training to enable you to compete with others. Unless you are one of the great exceptions—one of the Lincolns, the Edisons or the Fords—you will be sure to lose out in the fight. Then, again, you ought to study a vocation to learn what will be demanded of you in the way of duties. You may have an abstract idea that you want to be a lawyer, a journalist or a doctor, but until you have studied that vocation carefully, so that you will know everything that will be demanded of you—not only while you are preparing for your vocation, but also after you have entered it—you are bound to meet with disappointments and set-backs.

Study also the advantages and limitations of each vocation. Sometimes you may find that, though a vocation offers you good pay, it will not give you the social advantage of another vocation which you could follow with almost as good results. Then it is up to you to weigh these desires and ambitions as against financial returns. As has been mentioned before, the pay of army officers is very small, but they have a certain social prestige which is very dear to the heart of some persons. There are other advantages to be considered—the advantages of spare time, the advantages of studying while you work, or of continued learning, the advantages of an easy-going methodical existence or perhaps the advantages of travel and seeing the country. All these things must be taken into consideration. The cost of preparation, too, is another good thing to know—better to measure your purse beforehand than to have to give up your work after you have started to prepare for it. It is for all these reasons, for comparison, elimination and for satisfaction of desires and ambitions that you must study the various vocations, just as you have studied yourself, and in as systematic a way.

Likes and Dislikes.—Look over the list of occupations in the index very carefully. Give plenty of time to the study and selection, because it is going to mean a great deal to you. Every minute you spend in this study will be repaid a hundredfold, not only in time but in satisfaction and contentment. Instinctively, you will no doubt pick the things that you like best. The things you pick will seem to you the most attractive subjects for reading. This will indicate that you are following the first requisite for happiness in your future work—doing the things you like best to do. If you have personal likes and dislikes for no particular reason, or even if they are based on superficial knowledge, it is wise to follow them. Do not let anything you may have heard about a certain occupation keep you from considering and studying it if it holds some interest for you. The person who told you that such and such an occupation was a very unsatisfactory one to follow probably found it so because he himself was not properly informed or fitted when he entered that vocation. Being handicapped all his life and having to compete with others better trained, or with a greater love for the work in which he is engaged, he probably found little opportunity to enjoy the pleasures of his vocation.

Every occupation has its compensations for the person who is fitted to follow it. In the long run, you will be most likely to find success in some occupation for which you have an instinctive liking than in any other. Pure enjoyment in your work will help to overcome many difficulties. Many persons have followed a vocation for which they apparently seemed unfitted—perhaps because of some physical handicap—but their great love for the work enabled them to overcome all the obstacles which they found in their path. Nothing would induce them to give it up—ill health, the advice of friends, the assurance that they could never succeed in such work, lack of the proper qualifications or education—in spite of these things, they triumphed. Of course, such cases are exceptional, but they only go to prove how much depends on choosing a vocation for which you have a strong liking.

Dreams and Aspirations.—Almost every boy has a dream—a certain aspiration, secret though he may keep it. Perhaps you are afraid that parents and friends will laugh at you if you ever mention that great desire; or perhaps you are afraid of those who would try to discourage you if you should ever avow your intentions of aiming so high. Now is the time to remember that great desire. When you look over the list, see to what extent each occupation corresponds to, or is likely to prove a stepping stone towards, the attainment of your ambition. Perhaps you want to be a great railroad president, perhaps a great foreign exchange banker, perhaps even a Congressman or Governor. Whatever you want to be, pick out those vocations which seem most likely to lead eventually to the place in the world you most want; that is, choose law if you want to be a Congressman or Governor—choose banking if you want to be a big foreign exchange banker. Perhaps you will start with a mere clerkship, but the bigger positions are waiting for the man with ambition and talent. Perhaps the humble position of engineer on a train will lead to the railroad presidency—such things have happened before, for it is the man who knows the business from the ground up who will advance the fastest when once he has gained his foothold. So not only is it wise to consider your personal likes and dislikes and your secret ambitions, but it is practically essential to your success that you do so.

Desirable Characteristics.—Perhaps, through this consideration of the list of occupations, you have reached a tentative conclusion about several vocations which you think you would like to follow. If you have been able to eliminate those which can hold no interest for you, and retain those which do hold some special interest, then your task will be that much easier. If you are one of the many who have no idea at all as to what they want, or do not want, to do, you can still make your choice, but it will take a little more time and consideration for you to reach a definite conclusion.

In the latter case, you must read over all of the analyses of occupations provided in this course. They are not long, and you will find them interesting to read—throwing new and unsuspected light on old familiar topics. Even if you have a fairly definite idea of the kind of work you want to do, it will not be time wasted to read over these descriptions, for you may find a better plan of adjustment between yourself and an occupation about which you know little, than in the case of one of which you have had some previous knowledge. After you have read these analyses over, even though you had no definite ideas when you started, you should be able to narrow down your studies to a few selected vocations. Each description of a vocation will give you some idea as to the desirable native abilities, the advantages and disadvantages of that vocation, its limitations and its chances for advancement, the preparation that is required, in addition to the amount of educational preparation, without which but little progress can be made. By comparing all these things, you should be able to make at least a tentative selection.

Having marked off those vocations which interested you most, it is now time to begin a thorough study of each one selected. Just as, in making your self-analysis you wrote down all the various characteristics you found that you possessed, it is a good idea to have paper and pencil with you when you sit down to study these vocations. First of all, read the descriptions carefully to see what the requirements of each vocation are. Note the mental, moral and physical requirements of each, and under the heading of, say, engineering, put down these desirable characteristics. For instance, you will find that the engineer should possess imagination, without which he will be unable to visualize a thing mentally before it is created. He must have a capacity for sound judgment and accurate thinking, for his work demands scientific precision. He must have a creative instinct, and love to work things out, and plan and develop new and original ideas. He should be proficient in mathematics and science, for engineering is built largely upon mathematical calculations and physics, for the mastery of which an analytic turn of mind is required. In addition to all this, the engineer should be strong physically, resourceful, a quick thinker and a "good mixer," for he will have to deal with men as well as materials.

Again, if you want to be a buyer, study the requirements of commercial enterprises. You must have tact and skill in dealing with people. You must have a knowledge of human nature, as well as an extensive knowledge of goods and their markets. You must know exactly where each type of goods can be bought to the best advantage. You must have conversational ability, energy, push, resource and initiative. All these things will be required, and it is up to you to put all these things down on a piece of paper, so that when you have made a complete inventory you will be able to begin the comparison between the requirements of a vocation and the qualifications you can offer.

Take a third illustration, carpentry. Perhaps you want to follow some trade, since you have always felt an interest in your manual training courses. To be a successful carpenter, you must be skilful with your hands; you must be able to draw; you must be able to read drawings, plans and specifications; you must have some mathematical ability and some knowledge of the allied building trades. So, as you study the descriptions of the various occupations, pick out first the desirable abilities, and list them.

Note, too, in reading, the duties of each vocation. On the surface, or before you begin to study a vocation, it may appeal to you immensely. You will say, "Oh, yes, I'd like to be a doctor"—or a lawyer—but you have not stopped to consider all the little irksome duties a doctor or a lawyer must perform. If you are a methodical person, who likes to have a place for everything and everything in its place, and a time for everything and everything in its time, when you come to study the vocation of a doctor, you will see that the general practitioner has no time that he can call his own, but must always be at the beck and call of his patients—day or night, no matter what the hour or the weather. Then there are also the long years of training, the years of interne work, the long hours of patient waiting, which the young physician must undergo before he has made his reputation. All the disagreeable little tasks that the doctor must perform—it is well to consider these things before deciding on a vocation. As a lawyer, you picture yourself at the bar, pleading before a courtroom of people; that is as it should be, but it would be wise to know all the tiresome details that will be required of the lawyer—the brief that must be written and the hours and hours of research work necessary to its preparation, the petty routine work of the law clerk in the law office—these are other points to be taken into consideration. Put all these requirements down on paper.

Put down, too, the amount of preparation necessary for each vocation. Some vocations require college training, others do not require it, but success will come easier if you have had it. Others require a definite technical training—especially is this true in any of the trades. Success comes in some enterprises with but a high school education, while some professions require definite training, as, for instance, journalism. It is important to know just what training is desirable and then to see if you can meet these requirements; to decide whether the training you already have is sufficient, or whether more specific training would be necessary. For some of you, it will be impossible to get a college education—or perhaps even the two or three years of schooling in a technical or industrial school. If you cannot do this, and such training is absolutely essential to your success in a chosen vocation, you have no choice but to discard the idea. On the other hand, do not forget that many courses may be taken up at night while you go on with some sort of work—preferably work which will give you a groundwork for your chosen career—by day. Then, too, it was never easier to get a college education than it is today. You will find it comparatively easy to work your way through college, with the proper ambition and the proper amount of persistency. Everyone—faculty, students and trustees—is willing to help the ambitious boy along, for he is the type which brings most glory to the Alma Mater in the days to come. The boy who wants to succeed will succeed no matter what the sacrifices he must make in the beginning. Perhaps the vocation you have chosen requires no more study than you already have had or requires merely the study of certain definite subjects, such as mechanical drawing or certain mathematics or science courses. It is necessary to put down all these requirements on paper to see whether you can fulfil them.

It goes without saying that it is always wise to study the rewards of a vocation before coming to any definite conclusion regarding its desirability. The financial rewards are not the only ones that count, though for some people, they must necessarily be of paramount interest. If you must support or help to support a family, consider whether the rewards of a certain vocation would not be so much greater after a few more years of study as to warrant your struggling along somehow until you finish that training. The social rewards have been mentioned before. To some boys, these will be of first interest in studying the rewards of a vocation. If you are socially inclined, you will find that some occupation which will gain you a wide circle of influential friends appeals to you more than one where your social life must necessarily be limited. Doctors, lawyers and engineers always stand high in the social scale as do teachers and the officers of the army and navy. In some instances the salary is small, but the entrée to better social life is worth much to an individual. In other cases there is the reward of service. If your object is not gain for yourself but good for the community, you will study the vocations with the purpose of selecting those which offer the greatest opportunity to serve society. For this reason you will take into consideration the contentment which comes from such occupations as social service work, teaching, politics, and so forth. For some, there may be still another reward—that of the peacefulness and sureness of certain vocations. For this person, the fact that, day after day, he will be doing the same thing, without worry, without hurry, always knowing just what each day will bring forth, will bring the contentment that his nature desires.

In making this analysis you must also put down the advantages and disadvantages of an occupation. One line of work requires long hours, but pays well; another offers short hours, but poor pay; still another holds the advantage of variety, as, for instance, the profession of journalism. This may be the thing you desire. Or, again, another occupation offers methodical, monotonous work—this appeals to still a different type. Some vocations offer educational advantages at the same time that one is working; that is, one is continually improving his mind with his work, as, for instance, in college teaching. This fact will be of interest to those who hold an education above all else. Then there is the advantage or the disadvantage of outdoor work. To some it is desirable; to others very undesirable. Whichever way you consider these requirements—whether as advantages or disadvantages—put them down upon your list accordingly.

When you have completed the study of all these vocations, you should have for each vocation a list which will show, at a glance, that vocation's duties, advantages and limitations, the desirable native abilities, financial and other rewards, the preparation necessary, the educational requirements and cost of preparation. One by one compare these requirements with the results of your self-analysis. The comparison should now be easy. For instance, you may have picked the profession of engineering as one which would interest you. You find that it requires a certain amount of study beyond high school. Very well, you can afford both the time and the money to give to that schooling. You see that it requires imagination, sound judgment, creative instinct, physical strength. You are sure you possess these qualities. It requires constructive mechanical ability. You have always enjoyed and excelled in that sort of work and study. The duties appeal to you, and the compensations are sufficiently attractive. Everything seems to fit perfectly—until you find that, in order to succeed as an engineer, you must be a good mathematician. You have always been poor at mathematics and loathed the study, and are sure that nothing could make you like it. Even if you thought you could overcome your distaste for, and poor accomplishment in, mathematics, it would be wise for you to discard engineering for another vocation. Of the hundreds of occupations available, it would be folly to select one that depends so largely upon the subject in which you are so weak. This is the sort of comparison you must make with each vocation that you have chosen. Go down the list of requirements and check off each one on the chart of your own abilities.

Now take, for example, a business position, such as that of a buyer for a big store. On the occupation side, you see that it requires a knowledge of goods. You have always been interested in some line of goods, say, furniture, for instance; know all about the different types, know how it should be made and how it should not, where it is best made, and so forth. You see that, to be a buyer, you must have considerable knowledge of human nature, that you must know what people want and how to get what you want from others. Perhaps you have always been able to do this from childhood; many people are of this type. As for the care of stock and knowledge of its location, you have always enjoyed the study of these things, and even know where the antique types may be located. Everything seems to be coming along well, in this comparison. Energy, push, resourcefulness, initiative—all these things are required—but you have them all. Then comes the requirement of tact and skill in dealing with people, and good conversational ability. You have always been more or less taciturn and have never made friends easily. Without this ability you will never make a great success in this line of business. Of course, one does not immediately become a buyer in a big store. Such positions come only after years of experience and development in more lowly merchandising positions. It is possible that you may be able to overcome your shortcomings in this respect, and learn to become sociable and even a good conversationalist. Actual business experience, the cultivation of the right kind of friends and good reading will help to accomplish that.

Make the same comparison of the requirements of a trade, as, for instance, carpentry. Consult the description headed "Woodworking"—and there you will find "considerable manual training." Some of it you will probably have obtained in the elementary or high school, but more than this will be required. Perhaps you are one of those who feel that they must go to work immediately in order to help support a family, but you will notice that there are many evening courses in various schools, in some of which the training is free. So you go on in your study: skilful with your hands—you have always been interested in making little contrivances about the house—well and good; the ability to make plans and read them—you enjoy that, too; you see that some mathematical ability is required—you were pretty good at it in school; some knowledge of the other building trades is essential—you are as much interested in them as in your own, hoping one day to be a general contractor yourself. So you go on through the list and find that you have everything to offer that the occupation requires. If the other things—your interest, your ambitions and your preparation—are satisfactory and you feel certain that you have found the occupation you want to follow, then the first and perhaps the most important part of your vocational problem is solved.

Using the Public Library.—Now, perhaps there are three or four, maybe more, occupations, all of which seem to fit in pretty well with your dreams, ambitions, likes and dislikes, native abilities and preparation, and will bring you the rewards that the right occupation should bring. Perhaps you feel that you could follow almost any one of them equally well—as far as you can tell at the present time. So there still remains the process of elimination until you are able to say with certainty that *this* is the occupation for which you are best fitted and in this work will you be best satisfied. In order to reach this certainty which is so necessary to success, you will have to make a further study of these few vocations that are left after your first study. In order to do this, you must seek the help of your public library, consulting books, magazines and trade papers which have to do with these vocations or with certain phases of them. Read everything that you can find upon the subject, always testing yourself to see that attention does not lag. Continue the same sort of comparison of these vocations that you did in the first process, only studying a little more deeply and more carefully. Be sure that everything matches up—and see which cases you are most sure of. Study all the little details of the occupations that you can find mentioned in books and magazines and trade papers, and see if they fit in with your personal characteristics. You will not find a better help in choosing your vocation than reading and digesting the various trade papers. They contain the most interesting and up-to-date information concerning the occupation they deal with; and you will find in them side lights on every angle of an occupation—find thoughts which would never have entered your head without this intimate information. Many occupations are subject to changes, corresponding with changes in outside conditions. The condition of the labor market, the supply of materials, the supply of labor—all these things influence a trade, and in the trade papers you will find the immediate information which no book could contain. A good test of your fitness to enter a trade is the interest you take in reading its trade papers. If they hold little or nothing of interest for you, you will certainly never find very much happiness, success or contentment in following such a trade. When you combine all the detailed information which you can obtain from books and magazines with the very recent information and interesting details which you can obtain from the trade papers, you ought to have little trouble in making, at least, a tentative decision. Do not begrudge the time spent in this study. It will be richly repaid in time, money and happiness on some future day.

Seeking Counsel.—After you have made a tentative choice of one or two subjects, the next step is to consult with persons who are interested in that vocation, who have worked in it, know it or have studied it. From them you will get further information as to just what the vocation is like, just what sort of recompense you may expect; for they are working in fact and not in theory, and so can tell just how much fun there is in the work, and what duties will be expected of you—what its advantages are and what its limitations are. They can tell you how much money you can expect to make if you follow that same line—and just what your rewards, social and otherwise, will be. Of course, you must take into consideration the fact that they may not have gone into the work as well prepared as you expect to be. Perhaps they were not well fitted to follow that vocation—and you expect to be so well fitted for it that you will not be subject to that sense of dissatisfaction which comes from constantly changing, trying to find the place you like best, and all the other dissatisfying circumstances that surround the taking of a job for which you are not well fitted by nature. On the other hand, if you can find some person who is well satisfied with the work he is doing, and has made a great success of it, you have found someone who can help you a great deal, and you should talk over with him all the doubtful points that may still linger in your mind, and ask him every question you can think of. But watch out for the person who is dissatisfied with his work, and you will find many such failures in the business world. These misfits are the cause of the prevalent malady, dislike for one's own occupation. If the person you are talking with is one of these misfits, then you may be sure that he has not found all that you expect to find if you follow the same road by choice and not by chance.

With a great many people there is always the tendency to overlook the redeeming features of their work and remember only the hardships. It is only human nature to do this, but it is a fact to be remembered and considered when you are talking the matter over with other people. It is not only necessary that you talk to persons engaged in the work which you are considering adopting for yourself, but it is wise to watch them at their work.

If you are going to take up printing, watch a printer at his work; think, "Would I like to do that sort of thing myself?"—and then go up to him and ask him all about his work. If such a thing is possible try your hand at the work you have tentatively decided upon. If you visit establishments which do the kind of work you are considering, see if you cannot be allowed to try your hand at those things which you could do—and watch carefully those operations which you could not perform without training.

Besides studying the vocations in this way and consulting with those engaged in them, you must also begin the comparison of requirements and abilities all over again. Find out from those who know you best whether they think you are fitted to follow the work you have chosen. Talk to your parents, who naturally have your interests most at heart and can give you the sincerest advice. Talk with your friends, who may know certain of the qualities you express when playing games or in friendly intercourse, qualities which are more or less unknown even to your parents. Talk with your teacher, who certainly knows your educational abilities and training better than anyone else, and may also know quite a bit about the vocations which you are studying, since many teachers are interested in vocational guidance.

Parents used to be able to guide their children into the right path because they knew best the peculiarities of their own children; but today the complexity of occupations, especially in the cities, makes it very hard for the busy parent to familiarize himself or herself with the various requirements of each. Often a father will desire a child to follow in his footsteps and will do all in his power to influence him to enter that vocation without consideration of qualifications. Sometimes, also, a parent thinks he knows his business "too well" and will try to keep his child out of it in order to save him from all the difficulties that he himself underwent while he was working his way up. He forgets all the pleasures he found in his work, and can see only the hardships, because he wants to save his boy from these same troubles. Other members of the family, and friends who are interested in you and your success will gladly talk the matter over with you and give you their candid opinions as to whether or not you will find success in your work. Your family and friends know you best of all—know your capabilities, your habits, peculiarities and abilities—and you will do well to stop and study their advice and ponder over why they think as they do.

When it comes to consulting with a teacher, choose the one with whom you are most familiar, so that you may talk without restraint, and so that you will feel his sympathy for you and your work. If you have studied with that teacher, he or she will be able to tell you whether you have abilities in one line of study or another, and whether you can succeed in the higher branches of that study—whether your educational background is sufficient for you to build still further upon it. A good teacher will also know your personal characteristics—whether you are nervous in reciting, or whether you speak well before a crowded room; whether you are well liked by your fellow students, or whether you are hard to get acquainted with; whether you are quick mentally, or slow but retentive; whether you like books and studying, or whether you study by compulsion or from fear of being left behind. All this can a teacher tell you, and much more besides; and you would do well to heed the advice. But no matter with whom you have consulted or how many people you have talked with, always make certain allowances and remember that in the end you, and you alone, must be the final judge.

Making the Decision.—You have now come to the most important step of all—making the final decision. Not only is it the most important step in choosing your vocation, but it is probably the most important step you will have to take during your whole lifetime. No other step will have a greater effect upon your whole life than this one. If you choose the right vocation, you will be happy in your work all your life, following it with a maximum of smoothness, satisfaction and content, and a minimum of irritation and unhappiness. If you make the right choice, you will rise the quicker to success; while if you make a wrong selection, you will probably never make the most of the abilities that were given you by nature; and with which abilities, provided you employ them in the proper field, you should be able to meet all competition and rise to the highest places in the vocation which you select. With future success and happiness bound up with this one decision, it is easy to see that you cannot spend too much time or too much thought upon the matter.

The tragedy of the man who is bound forever to the work which he despises—how he never makes the most of his talents and never rises to higher levels—has already been discussed. After all, we have only a few short years in this world, and a large part of our time is spent in work. A maximum of enjoyment of life, then, can only be obtained if we take joy in the work we do. If we find our need for pleasure satiated in our work, then we will not have to look for outside amusements. The reason why so many of our young men are dissipated today is because they hate their work, do it only that they may have the wherewithal to play—and play too hard in order to forget the unhappiness of their working hours. When you begin to burn your candle at both ends, the least harm you can do yourself is to shorten the number of years allotted you in this world.

If you only realize how much depends upon your right choosing, you will never begrudge the time you may now spend in determining just what the right vocation is. Not only is your own happiness at stake, but also the happiness of those who may be dependent upon you. It is your duty to keep them happy in your own happiness, and comfortable with the ease that success and its financial rewards can buy. So do not make a final choice until you are absolutely sure that you are making the right one. Unless you are absolutely sure of this, you will lack that certainty of purpose which is necessary to dispel any doubts which may arise in the future. You should be so certain of the finality of your choice that you will never long question the wisdom of the step, but just drive ahead, with the certainty that sooner or later everything will come out all right and you will see your way clear to the realization of your ambition.

Do not choose a vocation in desperation and fear that you will never find the right one. Today more than ever before, with the great specialization of industry, professions and business pursuits, there is a place for every type of man. There is a place which requires just the sort of aptitudes which you possess, and it is only waiting for you to come along and offer yourself. Any big employer or employment agency will tell you that there are always fine positions which cannot be filled because of the difficulty of finding men who can meet the requirements. So go on and on, and study and study until you are certain beyond a reasonable doubt that you have found the proper sphere. After all is said and done, in spite of all the questioning and consulting you may do, there is no person, not even among those who know and love you best, who can make the choice for you. Even if you obtain the best professional advice on the subject, you yourself will have to decide whether to accept the advice or not. You, and you alone, must be the judge, for every man has deep within him thoughts, desires, tendencies and characteristics which no one else may know.

Below is a copy of an analysis made by a young man from a copy of the first edition of this book, and submitted to the author for his advice. You will notice that the student first made a careful tabulation of the requirements of a number of occupations that interested him, and opposite each requirement entered a corresponding personal quality which he possessed. Where a personal quality was in conflict with a requirement of the occupation studied, he indicated that fact with a star. He then summarized the conclusions for each occupation in one or two brief sentences, and continued the study until he found an occupation whose requirements he could match with his personal qualities. Equally gratifying results can be obtained by anyone who will make as conscientious and systematic a study of his own case.

SPECIMEN ANALYSIS

Qualities Required	Occupation	My Personal Qualities
	AUTOMOBILE MECHANIC	
Mechanical turn of mind		Have mechanical leaning
General education		Good education
Trade school training		Could go to trade school
Medium hard work		Physically strong
Varied work		Like varied work
Indoor work		*Like outdoor work
Skill with tools		Like to work with tools

Conclusion.—I have all the necessary qualities for a mechanic, but do not feel that I should like to work in a shop or garage. Neither do I think I could acquire enough skill to make a good mechanic.

Qualities Required	Occupation	My Personal Qualities
	CHEMIST	
General education		Good education
College education		*Could get, but difficult
Scientific mind		Interested in all sciences
Reasoning mind		Fair reasoning
Imagination		Good
Self-reliance		*Not much
Initiative		*Not much
Intellect		Good
Love of study		Like to study

Qualities Required	Occupation	My Personal Qualities
	CHEMIST—Continued	
Practical		Rather practical
Indoor work		*Like outdoor work
Duties		*Do not appeal to me

Conclusion.—Chemistry does not appeal to me for the reasons indicated above by the stars.

	LINEMAN OR ELECTRICIAN	
Outdoor and indoor work		Like outdoor work
Mechanical work		Mechanically inclined
Interest in electricity		Interested in electricity
Careful		Careful
Reliable		Reliable
Accurate		Accurate
Strength		Strong physically
Theory of electricity		Know something of electricity
Practical		Quite practical
Varied work		Like varied work

Conclusion.—I have all the necessary qualities for an electrician, but I am not sure that I would enjoy the work. Nor does the work lead to any higher positions unless one has exceptional ability.

	FORESTRY—FOREST RANGER	
Scientist		Interested in science
Wide and varied experience		*Little practical experience
Business sense		*Little business knowledge
Executive ability		*Poor executive
Practical		Quite practical
Strength		Strong
Outdoor work		Like outdoor work
Travel		Like travel
Ingenious		Quite ingenious
College course		Could get

Conclusion.—Have not the qualities for forester. May be interested in forest ranger work.

	FARMER	
Outdoor work		Like outdoors
Love of nature and animals		Like nature and animals
Hard work		Strong
Practical		Quite practical
Active		Quite active
Manage men		*Not good at it
Scientific knowledge		Interested in science

Qualities Required	**Occupation**	**My Personal Qualities**
	FARMER—Continued	
Initiative		*Not much, but might develop
Handy man		Quite handy with tools
Business sense		Not much business sense

Conclusion.—I know I could be content on a good farm. However, it will take a long time to earn a farm, and salaries for farm hands are uncertain.

	CIVIL ENGINEERING	
General education		Good education
Mathematics		Good at mathematics
Technical course		Could get
Skill		Like work with instruments
Strength		Strong
Travel		Like travel
Imagination		Good
Creative instinct		Like to build
Ingenious		Quite ingenious
Executive ability		*Not good executive
Outdoor work		Like outdoor work

Conclusion.—Civil engineering appeals to me more strongly than any other occupation, and I have decided on it as my life work. Upon a further study of this occupation, I found that the need for executive ability is not great in some phases of engineering, and so this will not prove an insurmountable obstacle. I can probably develop more self-assurance as I acquire more experience. The college education required will come hard, but I believe I can make it. I did not intend originally to aim so high, but after giving the matter serious study I have come to the conclusion that an occupation less desirable would not be worth the effort required to make good in it. I shall therefore plan on Civil Engineering as my life work.

CHAPTER V

PLANNING YOUR CAREER

Once you have made your decision, the next thing is to lay out a plan by which you will guide yourself to ultimate success and the realization of your ambition. Planning a career has often been compared with the mapping out of a long journey. You are more likely to reach your destination if you determine in advance in what general direction you intend to go, and at what places you intend to stop on the way. The comparison is not perfect, as there are many considerations entering into the planning of a career that do not enter into the planning of an itinerary. For one thing, the stopping places on the way through life are not as distinctly marked, nor are the distances between the signposts as definitely determined, as in the case of geographical points. Nevertheless, it is better to have a plan—though a flexible one—than to leave the journey through life entirely to chance. The plans may require revising as one goes along, for no one can be wise enough to anticipate all possible contingencies which the future might bring. Nor is it at all necessary to anticipate them; the main thing is to stick tenaciously to the destination—long or short detours on the way may be unavoidable.

It frequently happens that a man who has taken up a certain occupation, and has spent many years in the preparation for, and in the practice of, his work, will, for various reasons—or for no reason at all—become restless and discontented and wish to make a change. The unknown is usually more attractive than the things with which we are familiar, and so it appears to that man that another occupation than the one in which he is engaged is a better one than his own. He does not know the unpleasant details of the other man's work, but is familiar with the irksome requirements of his own. He forgets that all occupations involve some duties that are unpleasant, and that one must take the bad with the good. At such a time, the value of a well-made plan is great. By referring to it again, and studying the reasons that originally determined his selection of the occupation, he may again realize his peculiar fitness for the work and take on a renewed interest in it.

In making your plan, there will be some things which you will be able to determine definitely in advance; for instance, the educational and legal requirements for entrance into the professions. Other factors, such as length of time in a subordinate position before promotion may be expected, cannot be so definitely predetermined. A great deal will depend upon the occupation selected. If you select a trade, such as carpentry, the period of apprenticeship and the length of time required as a helper before you can become a journeyman carpenter are more or less fixed by the rules of the union or the customs of the community in which you wish to work. These requirements can be found by a study of the occupation. But after you become a journeyman carpenter, any further promotion will depend upon circumstances that cannot be definitely anticipated, although their general nature may be known. For instance, you may not be able to tell how long you will have to wait until you can become a foreman, but you know that foremanship is a possible promotion, and you can prepare for it so that when the opportunity does present itself you will be ready.

After becoming a foreman, you may desire to become a contractor. Here too, the exact time that this will take cannot be determined in advance, as it will depend upon your economic situation and upon future contingencies which you can neither anticipate nor control. But you can plan to become a contractor by determining to learn the things which the contractor must know, to develop the qualities which the contractor must have and to save enough money to make a start in business for yourself. All these things can be studied and planned for in advance.

If you wish to enter one of the professions, you will plan to meet the educational and legal requirements, which in most professions can be definitely ascertained in advance. In some states the prospective lawyer is required to serve a clerkship (a certain length of time in the employ of a practicing lawyer) before he may take the bar examination; a doctor must serve an interneship in a hospital before he is permitted to practice; and in some cases a pharmacist must serve as a junior clerk before he is entitled to a license. A study of the occupation will reveal these requirements to you. In law, medicine, dentistry and in some minor professions, the requirements are definitely determined by law in the community in which you intend to practice. In engineering, the conditions are not so well fixed. About 50 per cent of the engineers in this country have no engineering degree, having worked their way up in the industry in which they are engaged. As the records show that, of the number of engineers without degrees, as many have distinguished themselves as have those with degrees, the question of preparation will have to be determined by the individual himself. Many successful engineers have started in the drafting room or with a surveying party and, by unusual fitness, close application, keen observation and hard study in spare time, have attained the highest positions in the profession. Such progress is, however, becoming more difficult, as education is becoming more common and the competition keener. The man without a college education is seriously handicapped in any profession and, unless you can bring to bear qualities far above the average to compensate for the lack of a degree, you will do well to plan on college work if possible. Assuming even that you have such superior ability, a college training will enable you to make more rapid progress.

Suppose you wish to engage in business pursuits, with the hope of becoming, say, a buyer in a large department store, or perhaps a proprietor of a business of your own. Your plan in this case will involve more possible variations than in either the trades or the professions. Yet, a study of the occupation which you have chosen will reveal a fairly definite line of promotion from one position to another. In your plan you will have to put down your ultimate goal, and then study the occupation with a view to finding out the successive steps necessary to attain that goal. A vocational plan is tied up inseparably with an educational plan, and you will do well to keep that in mind. In making your plan you should also bear in mind that, wherever possible, your education should come first, or early in life. The older you get, the more difficult it becomes to acquire an education; and this is due to limitations imposed by social obligations, to economic conditions, to habit and to the slowing up of the capacity to learn. You may plan to begin your business career as a sales clerk; but if you limit your education at the beginning to the requirements of a sales clerk, with the intention of studying in your spare time for the successive promotions, your progress is likely to be much slower than if you get a higher education in the beginning. But, of course, circumstances will govern individual cases, and no definite rule can be laid down that will apply without modification to everyone. Your plan will have to be made in accordance with the requirements of your particular problem.

You will find it fascinating, as well as profitable, to plan your career. Nothing is more interesting than to watch yourself as you travel steadily along the path you have planned. Your success will depend not only on your plan, but also on how conscientiously you follow the common-sense principles you now lay down. So plan carefully, and work hard while following your plans, and you are bound to attain success in the end.

In making your plan, it is best to include a complete record of your study of your vocational problem and the various stages you went through in determining your choice of a vocation. You will, therefore, start with your self-analysis, and follow it up with the analysis of occupations, the making of your choice and finally, with the actual plan for attaining your ambition. The importance of this task warrants your taking great pains in its execution, and you will get a great deal of satisfaction from putting it into good mechanical form. As a number of sheets will be required, you should clip them together and attach a cover page, upon which write your name, the date and the vocation selected. This should be followed with your self-analysis questionnaire and then with the rest of the plan, in accordance with the following outline:

THE PLAN

Outline

I. Name. Date.
II. Vocation chosen.
III. Self-analysis:
  Answers to questionnaire on page 31
IV. Occupational analysis:
  See specimen analysis on page 49
V. Reasons for choice:
  (a) From conclusions to occupational analysis
  (b) Any other reasons
VI. Educational requirements (number of years in each case):
  (a) High school . . .
  (b) Trade or technical school . . .
  (c) College . . .
  (d) Night school . . .

THE PLAN—Continued

Outline—Continued

- (*e*) Correspondence school . . .
  Total number of years . . .
- VII. Legal or other requirements:
  - (*a*) Clerkship, interneship, junior practice, etc., depending upon the profession (number of years)
  - (*b*) Apprenticeship (number of years)
- VIII. Possible compensation:
  - (*a*) Financial, at the beginning
  - (*b*) Financial, when experienced
  - (*c*) Other compensations, such as social, leisure, travel, etc.
- IX. Plan for meeting educational requirements:
  - (*a*) School or schools . . . Name or kind of . . .
  - (*b*) Number of years each
  - (*c*) Total number of years
- X. Plan for meeting other requirements:
  - (*a*) Nature of requirements
  - (*b*) Number of years
- XI. Approximate cost of preparation:
  - (*a*) Tuition
  - (*b*) Living expenses while in school
  - (*c*) Miscellaneous expenses, license fees, etc.
  - (*d*) Total cost
- XII. Plan for meeting cost of preparation:
  - (*a*) Earnings
  - (*b*) Savings
  - (*c*) Loans
  - (*d*) Insurance
  - (*e*) Scholarships
  - (*f*) Other sources
- XIII. Plan of progress subsequent to entrance into chosen field:
  - (*a*) List of positions in order of sequence, indicating possible line of promotion
  - (*b*) Requirements for each
  - (*c*) Plan of preparation to meet these requirements
- XIV. Personal deficiencies or limitations:
  - (*a*) List of, such as poor memory, lack of self-confidence, etc.
  - (*b*) How to overcome

The Money Value of Education.—In planning your career, it will be well for you to consider the value of education, and then plan to get the best education you can. Everybody knows the cultural value of education, and the many social and other advantages which educated people enjoy. But that education also has a dollars-and-cents value is, perhaps, not so well known. It is an established fact that the industrial efficiency of a whole country or state depends upon the advancement of education in that country or state. Take Germany, for instance, where education has always been well advanced, and compare its industrial efficiency with that of Russia, where, in spite of all its natural wealth, it has not been able to make much progress because its educational facilities have been so poor. If you compare Massachusetts and Tennessee you will find the same thing to be true. And just as the natural resources of a country, no matter how rich, are worthless without an educated people to develop them, so all the natural gifts of a man would be worthless unless he had an education with which to develop those gifts.

In the old days, a road could be built with little knowledge or education, but today it is a complicated process. Men educated in traffic must first determine which sort of road would be most economical and efficient; financial experts are required to provide the huge sums necessary for such an enterprise; civil engineers must lay out the road, bridge engineers build the bridges, and so forth down the list, not to mention the clerks, auditors, managers, minor engineers and laborers, who are spokes in the big building wheel.

The success of the uneducated is the exception to the rule, a fact that is proved by statistics from many sources. Perhaps the best-known study of this subject is the one by A. Caswell Ellis, in the *Bureau of Education Bull. No. 22,* 1917, entitled "The Money Value of Education." This bulletin describes a study that was made some time ago of the 8,000 persons listed in "Who's Who," a catalog of leaders in every line of endeavor. *Out of the five million uneducated men and women* in this country at the time the study was made, there were but 31 who had gained enough distinction to be listed in that book. About thirty-three million people had obtained an elementary school training, and of this number *but 808 attained* distinction. Of the two million people with high school education, 1,245 have won distinction, while, of the million men with college education, 5,768 have found their way to distinction and mention in "Who's Who." In other words, the boy with no schooling has about one chance in 150,000 of gaining distinction; with an elementary school education, he will have four times the chance; with a high school education, 87 times the chance; and if he has the advantage of a college education, he will have 800 times that chance.

In the same bulletin, we learn that Dr. Charles Thwing made a study of 15,142 men mentioned in Appleton's "Encyclopedia of American Biography." He found that there were 227 times as many college-bred men who had amassed great wealth as there were men without a college education. Studying these men in proportion to their numbers in the population, he found that the college men have become members of the national House of Representatives 352 times as often as the men who have not had the advantages of college education; President, 1,392 times as often; Justices of the Supreme Court, 2,027 times as often. In other words, though we have less than 1 per cent of college-bred men in our population, yet this 1 per cent has provided 55 per cent of our Presidents, 36 per cent of the members of Congress, 47 per cent of the Speakers of the House, 54 per cent of the Vice-Presidents, 62 per cent of the Secretaries of State, 50 per cent of the Secretaries of Treasury, 67 per cent of the Attorneys General and 69 per cent of the Justices of the Supreme Court.

An investigation was made by a committee of the Brooklyn (N. Y.) Teachers' Association, into the salaries received by graduates of elementary schools and of others who stopped school before graduation. Taking 192 elementary school graduates at random, the investigators were able to follow 166 until they were about thirty years old. Then it was found that their average income was $1,253.05, while the average income of those who had no elementary school education was about $500. As the difference of $750 a year is equal to 5 per cent of $15,000, this simple elementary education is practically worth $15,000 tucked away at interest for each one of the graduates.

This same committee also investigated the salaries of 1,600 pupils in New York City night schools. It was found that those who left school before finishing the eighth grade were earning an average wage of $469, after working about five years; those who finished one year of high school were earning an average wage of $435, but had only been working two years. Those who finished two years in high school averaged $466 after working two and one-half years, while those who attended three years were earning $503 after two years of work. From this it is seen that the three-year high school boys were already, after two years of work, earning more money than those who never entered high school, after five years of work. In thinking this over, you must remember that these pupils were above the average in intelligence and ambition, as they were continuing their education at night, so that the slow rise in salary of those who did not attend high school was not due to lack of ambition or interest, or to stupidity or laziness.

Indeed, it has been estimated that every day spent in school pays you $9.25 in increased salary. Figure it out yourself. Uneducated laborers average $500 a year for 40 years, making a total of $20,000. High school graduates average about $1,000 a year for 40 years, making a total of $40,000. To obtain this schooling, it requires 12 years of 180 days each, or 2,160 days in school. If 2,160 days can add $20,000 to your life income, then each day you spend in school is worth $9.25 to you.

Night school graduates benefit equally well by their additional training, as many investigations have shown. In one case graduates of a night school in New Jersey were compared. The average unskilled adult workers were receiving about $12 a week while the average skilled workers were receiving about $24 a week. The average graduate of the Newark Evening Technical School was found to have begun work at fourteen years of age at a salary of $3.55 per week and to have risen rapidly until at thirty-seven years of age the average salary was $42.03 a week as against the $24 a week earned by the skilled but uneducated worker. Those graduates who finished the course and were specially prepared to enter the machine trades were earning $57.17 a week. This proves that, while a night school education is very valuable, it is still more valuable when you specialize in some one industry. The very fact that so many industries have opened schools for their employees proves that employers have recognized the value of education, both for the individual and for themselves.

A record has been made of the salaries earned by the class of 1901 of Princeton University during the first ten years after graduation. In the first year their average was $706; in the fifth year this average had increased to $2,039.42; and by the tenth year the average had reached $3,804. This average was reached in spite of the fact that there were 19 teachers and clergymen reporting in the tenth year with very low salaries—about half as much as their classmates were earning. The 1906 class started out with an average salary of $859.60, which at the end of five years had risen to $2,225.80. A study was also made of the salaries received by graduates of the Sheffield Scientific School of Yale. The average salary in the first year was $683.85, rising to $1,257 in the third year and averaging $2,040.04 in the fifth year. The Harvard Law School graduates of 1905 averaged about $1,188 two years after graduation and in five years were averaging $2,616. Studies of Northwestern and of Dartmouth and University of Texas graduates show practically the same results.

Present-day earnings are, of course, quite different from those given in the above investigation, and allowances will have to be made accordingly. There are no indications, however, that the relative standing of the classes mentioned will be changed materially when conditions again become stabilized. Any one of the investigations mentioned might be open to criticism if taken alone. For instance, picking out the advantages of an education by studying the list of names in "Who's Who" might be open to the criticism that better surroundings, intelligent parents and other advantages may be the reason for this superiority, rather than the education itself; but when all of the investigations show practically the same results there can be no doubt regarding the superior earning power of educated workers.

Apparent Exceptions.—Attention is frequently called to this, that or the other man who has apparently succeeded without education—Lincoln, Edison and Ford are commonly cited as examples. How did these men succeed?

Abraham Lincoln engaged in farming, lumbering, teaching, storekeeping, and a great many other things. But while he was doing all these things he was constantly studying and planning to become a lawyer. Frequently thrown off his course by unavoidable circumstances, he nevertheless stuck to his one ambition until he finally succeeded. He never allowed his mind to rest, no matter how weary the body. His entire life was a struggle for education under the most difficult conditions—and it was not until he had acquired this much coveted education that he became successful.

Thomas A. Edison succeeded with practically no schooling. But who can say that Edison is not an educated man? He, too, struggled all his life for an education which could have been obtained much more easily in school. When one speaks to Edison about his genius, he smiles and says that his work is 2 per cent inspiration and 98 per cent perspiration. This is another way of saying that it was through hard work, self-sacrifice and self-education that Edison became the great man that he is today. And had he had the education he should have had, his labor would have been materially lessened. He himself is a great advocate of education, but deplores the education that teaches nothing practical.

Then take the case of Henry Ford, who, too, seems to have succeeded without an education. But in his case, as in Edison's, he made up for lack of education by his tenaciousness, hard work, study and perseverance. Had his genius been based on a liberal education, however, he might have become a great man as well as a rich one, and perhaps have been saved from the many indiscretions into which his lack of education leads him.

Assuming that there are men who have succeeded without education, they are so few, as compared with those who are educated, as to be almost negligible. And the strongest proof of the value of education lies in the fact that every uneducated man of means insists on giving his children the best education obtainable, not only to spare them the hardships which he himself suffered through lack of education, but, what is more important, to enable them to enjoy those finer things of life which only education and culture can make available. It is true that experience is a great teacher, but those who decry the value of education forget that it is through education that all the experience of the past is made available to us today. He must be an egotist indeed, who would match his own puny, limited experience and intelligence against the accumulated wisdom of all time.

Choice of Schools.—One of the most common causes of vocational dissatisfaction is lack of training for a particular occupation. A general cultural education places its possessor on a higher social plane than he could otherwise occupy; and to the extent that this higher social standing presents greater opportunities for the development and exploitation of the individual's talents, cultural education is a great advantage. But unless the individual possesses also a thorough training for some specific occupation, his cultural education is likely to prove of little practical value either to himself or to society.

The educational requirements of the various occupations are outlined in the analyses of the occupations in Part II. There never was a time when it was easier for the sincere seeker of knowledge and training to obtain an education. All over the country, under public, private and philanthropic auspices, courses of training are established, or are being established, for every conceivable kind of work. No matter what your circumstances or previous education may be, you can find a school that will provide the training you need.

In choosing a school, you should first consider your own circumstances and needs, and then try to find the school that most nearly meets your requirements. To help you do this, there are many sources of school information available. Practically all of these are described below:

Bureau of Education,
Department of the Interior,
Washington, D. C.

Publishes from time to time bulletins of information regarding education and educational institutions in the United States and possessions. These bulletins are obtainable free of charge direct from the Bureau, or from the Superintendent of Documents, Government Printing Office, Washington, D. C., in which case a small charge is made. The Bulletins are also on file in most public libraries. A list of Bureau publications is also issued periodically, and is obtainable free on application to the Bureau at Washington.

Bulletin No. 28, 1922, "Statistics of Universities, Colleges and Professional Schools, 1919–1920."

Contains a list of universities, colleges and professional schools; the location of each; courses of study offered by each; number of professors and instructors; number of students; other information.

Bulletin No. 10, 1920, "Correspondence Study in Universities and Colleges."

Contains list of universities and colleges offering correspondence courses; description of correspondence study methods; high school and college entrance courses; cost to student; scholarships and other information.

Bulletin No. 47, 1919, "Private Commercial and Business Schools, 1917–1918."

Contains two lists:

1. Purely private commercial and business schools, not connected or affiliated with any religious or public organization.

2. The Y. M. C. A. commercial departments and schools.

The lists contain the names and location of the schools; number of teachers; number of students; day and night courses; hours per day and night; tuition fees; time required for completion of courses.

Patterson's American Educational Directory,
American Educational Co., Chicago.

Contains a list of all schools and colleges in the United States, including universities and colleges, secondary and preparatory, professional, music, art, business and trade schools; a list of correspondence schools; information as to subjects taught, class of student admitted, religious affiliations, year established and name of executive head. On file in most public libraries.

Sargent's Handbooks,
American Private Schools,
B. E. Sargent, Boston.

This directory contains a critical list of private schools, including boys' schools, military schools, professional schools, schools of music, art, business, technological and trade schools. On file at most public libraries.

College and Private School Directory of the United States,
Educational Aid Society, Chicago, Ill.

Contains a descriptive list of universities, colleges, private schools, technical, commercial, vocational and correspondence schools. On file in many public libraries.

United Y. M. C. A. Schools,
The International Committee of Young Men's Christian Association,
347 Madison Ave., New York.

The United Y. M. C. A. Schools maintain schools and courses in practically every Y. M. C. A. center in the country. These schools offer a wide range of general, technical, commercial and trade courses, which are open to all men, regardless of creed. Information about these courses may be obtained at your local Y. M. C. A., or from the International Committee at the above address.

K. of C. Schools,
Knights of Columbus Committee on Education,
New Haven, Conn.

The Knights of Columbus are maintaining and establishing schools and courses of study in K. of C. centers all over the country. These schools offer a wide range of general, technical, commercial and trade courses, which are open to all men, regardless of creed. Information regarding these courses may be obtained from the Educational Secretary at the above address.

Y. M. H. A.
The Young Men's Hebrew Association, National Office,
352 Fourth Ave., New York.

The Young Men's Hebrew Association maintains community centers in many cities throughout the country, at which are offered courses of study and lectures on cultural subjects, including art, music, citizenship, etc. Some centers also offer commercial and preparatory courses. These courses are open to all men, regardless of creed. Further information regarding these courses may be obtained at the National Office, at the above address.

In addition to the above sources of information, there are many professional societies, some of which maintain educational departments. Most of these societies are, as a rule, glad to furnish information regarding schools offering instruction in the professions which they represent. A self-addressed and stamped envelope should accompany each request for information. The names and addresses of the more prominent national professional organizations are given below:

Accountants, American Institute of,
135 Cedar St., New York.
Actors' Equity Association,
115 W. 47th St., New York.
Actuarial Society of America,
256 Broadway, New York.
Advertising Clubs, Associated,
383 Madison Ave., New York.
Aeronautic Association, National,
17th St. N. W., Washington, D. C.
Agricultural Teaching, American Association for the Advancement of,
Secretary, H. D. Cotterman, University of Maryland, College Park, Md.
Architects, American Institute of,
1741 New York Ave. N. W., Washington, D. C.
Arts, American Federation of,
1741 New York Ave. N. W., Washington, D. C.
Authors' League of America, Inc.,
22 East 17th St., New York.
Automotive Engineers, Inc., Society of,
29 West 39th St., New York.
Banking, American Institute of,
110 East 42nd St., New York.
Bar Association, American, Section of Legal Education,
Baltimore, Md.
Chemical Society, American,
1709 G St. N. W., Washington, D. C.
Civil Engineers, American Society of,
33 West 39th St., New York.
Electrical Engineers, American Institute of,
20 West 39th St., New York.
Mechanical Engineers, American Society of,
29 West 39th St., New York.
Medical Association, American; Council on Medical Education,
535 No. Dearborn St., Chicago.
Ophthalmology and Oto-Laryngology, American Academy of,
New Willard Hotel, Washington, D. C.
Typothetæ of America, United,
608 So. Dearborn St., Chicago.
Screen Writers' Guild of the Authors' League,
6700 Sunset Blvd., Hollywood, Cal.

Public Schools.—Many excellent courses of study are offered in schools which may not be located through any of the sources given above. In many cities the local school system provides instruction in technical, trade and commercial subjects in day and evening classes. Information about such courses may be obtained directly from the local board of education. Normal and teachers' training schools and courses for teachers of industrial subjects are conducted by both city and state authorities, as well as by colleges and universities. Information about such schools and courses may be obtained from the State Board of Education located at the capital of your state, or from your local board.

Extension Courses.—Colleges and universities all over the country are expanding their facilities to take care of the increasing demands that are being made upon them. Courses of study are being added daily to the already large list. Especially is this true of the extension departments of the universities. These departments offer courses at hours convenient to those who must study while earning a livelihood. One does not have to be a high school graduate or take an entrance examination to qualify for these courses. As a rule, they are open to anybody who wishes to take them up. It is impossible for the U. S. Bureau of Education or other agency to keep up with this constantly expanding list of courses; hence, the publications described above are not likely to be complete. While these publications may be used as general references, in all cases, before making a final choice of school, you should send for the catalogs of the institutions which interest you, and study and compare them carefully.

Correspondence Schools.—The value of correspondence study is now well established. Besides the many private correspondence schools, good, bad and indifferent, many colleges and universities all over the country are offering home-study courses. The list of these institutions given in the *U. S. Bureau of Education Bull. No. 10,* 1920, is too old to be complete. However, a request to the Extension Department of any of the universities will bring detailed and up-to-date information about their home-study courses. One does not have to be a high school graduate to qualify for these courses; as a rule, they are open to anyone who wishes to take them up.

While the home-study courses offered by the extension departments of the universities are, as a rule, desirable, the same cannot be said of the courses offered by all the privately owned correspondence schools. This statement should not be taken as a reflection upon private correspondence schools, for there are a number of such schools doing excellent work—in some cases even better than the resident schools. But it is practically impossible for the individual to judge the value of many of these private correspondence school courses, for which exaggerated claims are frequently made by their sponsors. Even the better class correspondence schools offer some courses which do not measure up to the standard of the courses upon which their reputations were built. Thus, one correspondence school may be better for technological courses, another for commercial courses. There is no official regulation of correspondence schools beyond that of the post-office regulations regarding the use of its mails to defraud. All correspondence schools may be relied upon to furnish the instruction they offer; it is in their estimate of the value of this instruction that exaggeration sometimes enters. Many magazines and metropolitan newspapers which carry school advertising offer information about schools on request. The Bureau of Vocational Research, 296 Broadway, New York City, of which the author is director, investigates schools and renders confidential reports. A fee is charged for this service.

Some studies may be more successfully pursued by correspondence than others; and some persons may succeed with correspondence instruction, where others may fail completely. For those who live a long distance away from populated centers, correspondence courses are very valuable, provided the student is really in earnest and spends the required time and effort on his work. The lack of personal contact with a teacher and with other students doing similar work is a great disadvantage, for even an earnest student will often meet with discouragement, which a sympathetic teacher or fellow-student could dispel. Since correspondence courses are taken at home and without supervision, there is a tendency to skip parts or go over exercises hurriedly, because of the interference of home life in general. But if the student is a hard-working individual, who is taking up the course because he really means to succeed, he will succeed in spite of all obstacles. He can take his lessons off by himself and study earnestly, and get all he can out of them. Again, it can be said that all he needs is a definite aim and sufficient will power to stick to his studies in spite of all obstacles.

Power of Will.—One hears a great deal about the power of will. What is the secret of will power, and how can will power be acquired? The answer is quite simple. Suppose you make up your mind to do a certain thing—to follow a certain course of study, for instance—and after working enthusiastically for a length of time you gradually begin to waver and neglect your study. Why do you weaken in your determination? Is it because you lack will power? Not at all. A great many people would think so, and thus condemn themselves of a weakness which in reality they do not possess. The reason why you give way so readily to the inclination to neglect your studies is because you have begun to doubt the wisdom of the original decision—and to question whether the course you have taken up is worth all the trouble and hard work that it entails. In other words, the thing which should have been a closed question and settled once for all has become again a matter of indecision. The same questions that you asked yourself when you were contemplating taking up your new course of study crop up again; but this time the answers are not the same. Having embarked upon your new course, you have, to an extent, entered upon its duties—and find them distasteful. The line of work which, before you entered upon it, seemed so attractive, ceased to make its appeal as soon as you became somewhat familiar with it. You do not like it, and so finally decide to drop it.

You have dropped the course which at first seemed so attractive not because you lack will power but because you lacked sufficient knowledge when you first took it up. The remedy, then, is quite obvious. A vacillating will is due to indecision. Indecision comes from lack of knowledge. If you would develop your will, do not try to force it to maintain a determination which is based on insufficient knowledge, and which your common sense tells you is unsound. You will only fail, and weaken your will as a result. Instead, make your decisions more deliberately and only after the most painstaking study. Impulsiveness and poor will power go hand in hand. Especially in a matter as important as the choice of your life work, it is essential that you bring to bear all the thought, study and information that you can. And then, if you make your decision in accordance with the instructions provided in this book, you will have little difficulty in maintaining it, and your will power will not have too great a strain placed upon it.

Once started on your vocation, stick to it. Do not let anything turn you from your original intentions. If, after you have chosen a vocation, you are not sure whether you ought to stay where you are, but keep thinking you could do better somewhere else in some other line of work, you can trace that all back to the fact that when you made your original decision it was made without sufficient knowledge and thereafter you will never be quite sure whether you did just the right thing. Half of the misfits, the "square pegs in round holes" will tell you that if they had only studied and selected carefully they might have succeeded, whereas now they are only mediocre workers at the thing they are doing.

There should be only one decision in choosing your vocation, and that should be the right one. You should make that decision deliberately, and only after you have acquired all the information involved in the question. Do not spare time and trouble in getting all the information available. It may seem like a waste of time to you now, but in the end it will save you much more than that amount of time and trouble, and will prevent you from becoming a drifter. Once you are certain you have made the right choice, you will waste no time thinking about other opportunities, but devote all your time and enthusiasm to making a success in the work which you have chosen. When you have made your choice, put it down on paper, together with all the reasons that guided you in making that choice. Then, if you are ever beset with questioning fears as to whether you did the right thing in going into the line of work in which you seem to be struggling, go to that piece of paper and see why you made that choice. This fresh review of the reasons will give you renewed certainty and strength to go on with your work, and bring you nearer and nearer to the desired goal.

Summary.—We have seen that there are far too many misfits in the world of industry. We have seen their unhappiness and the unhappiness of those about them, as well as the loss to themselves and society from having "square pegs in round holes." Fortunately, we have also seen that such misfitting of man to industry is avoidable, and that the greatest success and greatest happiness are experienced when a man is doing the work he loves to do. From the earliest ages, man has tried to solve the problem of fitting the man to the job. Magic, fortune telling, clairvoyance

—all these appeals to the supernatural powers that man thought ruled the universe—have failed in their turn. The pseudosciences claimed much to their credit, yet physiognomy and phrenology were each tried and rejected by straight-thinking men and women. Vocational psychology may in time be developed into something of value in helping to guide the youth in the right choice of his life work, but at present the science is still in the formative stage and of little use.

But, in spite of all these things, there yet remains a way. The individual can do for himself what others have failed to do for him. He can study himself better than any outsider can study him; and he can determine his own characteristics by self-study much better than a physiognomist could tell him those characteristics by studying his face, hands and what not, or the phrenologist by the reading of his skull. All that is required is a little time, patience and knowledge—the knowledge of self, and then the knowledge of occupations; so that the individual may compare his own characteristics with the qualities and characteristics which each vocation requires. A careful filling out of the self-analysis questionnaire, and a careful study of the various occupations analyzed in Part II, will be the foundation upon which the individual can make a choice and be sure that he has made the best one. All the counseling and all the questioning in the world cannot do away with the fact that each individual must take the final step by himself. And from the moment the step is taken and the decision made, it rests upon the individual himself as to how far up the ladder of success he will go. If he plans well, and keeps his eyes always on the goal before him, if, when he has secured his first job, he constantly strives to make good, continually looking ahead to, and preparing for, advancement, he is bound to succeed.

If you have studied yourself until you know yourself, and have studied the various occupations until you have come to the conclusion that there is only one occupation for you to follow, and you have made your plans accordingly, there is but one other thing to consider, and that is that at all times you keep your honor clean and your character above reproach. With the right knowledge fortified with honesty, energy, morality, reliability and all the other essentials of good character, every man can win success in the career which he has chosen.

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No course of study, no matter what its nature, whether a book, a correspondence course or a university course, can be complete without outside reading. The following list of books has been carefully selected, and you are urged to read as many of them as you can. If any question arises in your mind that is not fully answered in this volume, you will find it treated more fully in one of the following books. The more thoroughly you study the subject, the more likely you are to make a wise decision.

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PART II

ANALYSES OF OCCUPATIONS

CHAPTER VI

ANALYSES OF OCCUPATIONS

Introduction.—The United States census lists thousands of "gainful occupations." The majority of these are of no interest to the average individual, as they are chiefly minor subdivisions of main occupations. For instance, in the shoemaking industry are found such occupations as tip maker, vamper, tongue stitcher, heel maker, shank cutter, laster and many others; while in weaving may be found such employments as carder, picker hand, cotton shaker, lapman, mule spinner, warper and stretcher. Obviously, a description of these and thousands of similar occupations would result in nothing but confusion to the student, and would make a wise choice exceedingly difficult, if not impossible.

The trades, professions and business callings analyzed in the following pages were selected not only because of their economic importance, but chiefly because they offer to the individual practically unlimited opportunities for the exercise and development of every kind of aptitude which he may possess. In addition, each occupation is interesting, profitable, honorable, healthful, broadening, stimulating and growing. Success is practically assured in any one of these callings, provided the individual who takes up the work is fitted for it by nature and training.

You will notice that the natural aptitudes and other requirements of the various occupations analyzed, while included in the text, are not tabulated. This is because it has been found that, wherever such tabulations are provided, the student is tempted to make a superficial survey of the requirements instead of reading the descriptions of them in the text. The best results are obtained where the description is read from the beginning to the end, and the desired information picked out and tabulated by the student, as shown in the specimen analysis on page 49.

It is not intended that these analyses of occupations be exhaustive. A more detailed study of each occupation might easily be made—to the extent, in fact, of changing this book into an encyclopedia. But that would defeat the purpose of this work, which is to present a survey of the high spots and distinguishing features of the occupations for easy comparison. A more exhaustive study of the selected occupations can then be made by the use of the references given in the bibliographies.

To facilitate the study and comparison of the occupations, the analyses were made to follow more or less uniform outlines. These were substantially like the one for Architecture, which is here given as an example:

ARCHITECTURE

Outline

1. The Place of the Architect in Society:
   (*a*) Importance of his work, etc.
2. Classification:
   (*a*) General.
   (*b*) Naval.
   (*c*) Landscape.
3. Description of Duties.
4. Advantages and Limitations.
5. Desirable Native Abilities:
   (*a*) Should the prospective architect have constructive imagination, artistic ability, etc.?
6. Financial and Other Rewards:
   (*a*) At the beginning.
   (*b*) After becoming established.
7. Educational Requirements:
   (*a*) General education.
   (*b*) Special training.
   (*c*) Is college training desirable, or apprenticeship with an architect? Or both?
   (*d*) Can it be studied at night?
   (*e*) List of schools.
8. Cost of Preparation.
9. Bibliography:
   (*a*) List of books, periodicals, society reports, government reports.
   (*b*) Name of publication, date, author and publisher.

By following the above outline, analyses of occupations other than those listed in this book may be made by the student.

The bibliographies appended to each analysis include only those publications which are of comparatively recent date, and that are easily accessible. The government bulletins and society reports, if in print, may be obtained from their original sources; otherwise they are usually accessible at the public library. The books and periodicals may also be consulted at the public library, or procured from book dealers or the publishers direct.

CHAPTER VII

ACCOUNTANCY AND THE BUSINESS PROFESSIONS

The field of business is a tremendously large one; thousands of people find employment in it, and there is room for thousands more. But though so many may enter the business world, those who are surest of making their way in it are the ones who go into it as specially trained professionals, able and ready to do some one difficult thing so well that their services will always be in demand.

Since ancient times, when trading first arose among men, it has always been customary to keep some account of the business done; and at present, when business transactions are becoming constantly more and more complex and elaborate, the accounting systems are of the greatest importance. It is through them that the financial state of individual businesses can be told, and thus, indirectly, that of business as a whole. In other words, accounts are a kind of key to the prosperity of a nation and, besides this, accountancy and the other professions connected with it are so very important for the successful carrying on and regulating of business that men trained in these professions find a large and profitable field for their labors.

Some people think that accountancy is simply another name for bookkeeping, but this is by no means the case. The duties of the accountant are entirely different from, and his responsibilities far greater than, those of the bookkeeper. The accountant must devise systems of accounts which will be most suitable to the business or undertaking for which they are intended. In order to do this, he must, in a general way, be familiar with the various fields of business, and in addition, make himself especially familiar with the particular features of each undertaking for which he is to devise a system of accounts. When he has found a system which will be most suitable, he must be able to see it installed—started on its way—after which it is left to the bookkeepers to carry on the daily work of "keeping the books."

The accountant not only devises new systems, but also supervises the carrying out of systems already installed. One of his duties is auditing the books to determine whether there has been any fraud and, when there is no question of fraud, to see whether the accounts are otherwise perfectly accurate. In the case of a concern which is doing business it is often the accountant's duty to draw up reports of the gains, losses and dividends declared, and of the general financial condition of the concern; and he is held responsible for the accuracy of such reports. Not only going concerns demand his services, but those who are going out of business for any reason whatever have an accountant report upon their financial state and upon the distribution of their assets.

There are times, too, when unusual conditions arise in the business world, and on such occasions accountants are employed as special investigators and consulted as business advisers. In these cases it is usually a Certified Public Accountant who is engaged. He is an accountant who has passed certain examinations given by the State Department of Education, and who has received the degree of Certified Public Accountant. The C. P. A. is usually a "free lance;" he accepts various business engagements, as would a lawyer, for instance. Some accountants are permanently employed by some firm or other enterprise, but these are usually not men with the C. P. A. degree.

Accountancy is, too, the basis of the other business professions. The duties of the auditor are more a matter of routine than those of the accountant, though they are in some ways similar to his; but the auditor's responsibilities are not so great as the accountant's. It is the business of the auditor to check up the work of the bookkeepers, to see that the books are in shape for the drawing up of financial statements, and for making analyses of the business. He makes, also, official statements as to the condition of the books, and is held responsible for their accuracy. And, in addition, he acts as an aid to the accountant, whom he assists in making up new, or in changing old accounting systems.

The duties of the cost accountant are much more specialized than those of the general accountant. He devotes himself to determining the costs of producing either merchandise or service, and he analyzes costs in order to bring about the most economic and efficient management of an enterprise. The cost accountant must be a well-trained bookkeeper, must understand the principles of accounting, and have some knowledge of factory conditions.

Then there is the systematizer—the man who, several years ago, was popularly known as the "efficiency expert." His chief duty is to provide forms and records through which a maximum of information may be obtained at the smallest possible expenditure of time, money and energy. He thoroughly investigates any enterprise into which he is called, and if he finds that waste of any kind is taking place, he reorganizes the business so as to eliminate this waste and to get the greatest possible results from the time, money and energy spent on the work.

The business engineer is a man especially trained to undertake the problems of organizing and managing industrial plants from the technical viewpoint. He approaches the problems of manufacturing, transportation—in fact, of production and distribution in general—scientifically, and yet as a business man. Still another business professional is the business counselor, or consulting accountant. He is usually a man of long and varied experience, whose advice is likely to be of great practical value. He is consulted by younger men concerning financial matters of unusual character and great importance, as some well-known medical specialist might be consulted by other physicians in a serious illness.

It is because the business processes of today are so complicated that accountancy has risen to the rank of the professions. In order to cope successfully with the big problems which are constantly arising, the accountant must have a thorough and specialized training, which, when carried far enough, entitles him to a degree. Every boy who wishes to take up the study of accountancy must have at least a high school education or its equivalent and, though it is not absolutely necessary, it is never inadvisable to have a college education. In high school the student should take as much work as possible in mathematics and English, and courses also in logic, modern languages and economics. If the boy attends a high school where commercial courses are given, he should also take advantage of the work in bookkeeping and business practice.

There are many studies included in the actual training for accountancy. Especially is this the case when this training is taken at a university. At present many of the large American universities have departments, or at least give courses, in the allied subjects of commerce, accounts and finance. Besides a thorough training in the principles and practice of accounting, bookkeeping and auditing, the student will find useful many of the courses which are included under the headings of commerce and finance, and which give information that later will be found to be a necessary part of the accountant's equipment. There are, for instance, courses in business organization and administration, in commercial law, in industrial processes, in domestic and foreign exchange, in banking practice and in many other subjects which will tend to give the student a better insight into business as a whole.

But no amount of study alone can ever produce a thoroughly efficient accountant. Acquaintance with, and experience in, real business are absolutely necessary. It is very useful to have a fund of practical information such as is gained in from two to four years at a school, but actual experience gives the would-be accountant additional training of a kind not to be found in school work. The New York State Department of Education recognizes this fact, for, in addition to the academic requirements which the student must fulfil before receiving the C. P. A. degree, at least three years' experience in an accountant's office is demanded. In many other states there are similar requirements. It is usual for the young man who wishes to become an accountant to work, while he is still in school, in some subordinate position in an office. Then, when he has completed his course, he has a certain background of practical experience which makes him fit to enter a more important position, or to undertake the responsibilities of independent practice.

There are numerous business schools in every city giving courses in accountancy. But probably the fullest and broadest business training may be obtained in the universities which give commercial courses. Courses in accountancy are given also in evening high schools and by the Y. M. C. A. and other similar institutions. Some of these schools offer evening courses and in some, too, there is no charge for tuition. At a university, however, whether day or evening courses are taken, there is usually a charge, the cost varying from about $300 to $500. Exact and complete information as to schools and costs may be obtained by applying to the schools themselves, or to the American Institute of Accountants, in New York City. The latter will also recommend to the student good textbooks and other reading matter on accountancy and the business professions.

But even the fullest educational and actual business training cannot produce an accountant or other business professional unless the student has certain special qualities of mind and character. First of all must come industry and honesty, which are essential to success in every vocation. It will easily be seen how necessary it is that the business professional have an alert and analytic mind. He must be awake to every phase of any situation in which he may find himself. The business professional who cannot adjust himself to the conditions and surroundings of the enterprise with which he is busy at the time will not be able to understand, and thus fully to satisfy the needs of that enterprise.

Adaptability is an exceedingly necessary requirement, because of the conditions under which the accountant is often forced to work. He must often do his work under high pressure, in a short time, and he must be prepared for long and irregular hours. Executive or managerial ability is also a desirable quality. With its help, the accountant will be able more successfully to arrange and supervise his work, and he will, at the same time, inspire greater confidence in his employers and assistants.

For the well-trained, capable young man, accountancy is a desirable field. The profession is not, like some others, overcrowded, and it is one which has many advantages. The work is useful, interesting and very remunerative. Students can earn an average of about $1,000 a year, and an accountant seldom starts with a salary of less than $2,500. Once he is started on his way, the good accountant can make from $100 a week upward.

At present there is practically unlimited opportunity for the man who goes into the newest field of accountancy—that of municipal accounting. This is concerned with the regulation of the public finances of towns, cities and states, and is a field of great public service.

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CHAPTER VIII

ADVERTISING

Advertising has, in one sense, always existed; it is as old as mankind, for, broadly speaking, it is merely some sort of announcement. But advertising as a profession, as an active and most important factor in the conduct of business, is a distinctly modern development. It is a science so young and so constantly changing that to most people the word "advertising" conveys only a vague idea of its scope and influence. Advertising today is the great business-getter—it is the presentation of goods or service in such a way as to appeal with the greatest result to the largest possible buying public.

The positions of highest standing in the world of advertising are those of advertising manager or director, plan man in an agency and copy writer. The work of these men is in many respects identical, but each has also certain specific individual duties. The advertising manager may be employed by any kind of firm or enterprise having anything in the line of goods or service to sell. The advertising manager is responsible for the advertising policies of the business, for the form these policies take and for their success. He must be able to build up a name and prestige for a new firm, or to continue that of one already established. The one standard by which his work is invariably judged is its success, for advertising is a very practical profession. It looks always for results; its very nature makes this the thing of prime importance.

The advertising man must be familiar with the day's business conditions in general, and in particular with the conditions of that field for which he is doing the advertising. He must know his own business and the business of a great many other people as well. Advertising is primarily salesmanship and, in selling, it is necessary to know what public to approach and how to approach it. So the more experience in business, and the more knowledge and judgment of goods and people which the advertising man has, the better for him. Very often the advertising manager does but little of the actual work of carrying out the advertising plans, but he must supervise this work and, to do so, he must understand it thoroughly. For this, actual knowledge of all the phases of advertising work is necessary.

The advertising manager does not always originate the new plans, but he should be able to do so, in order that he may know the difference between good and bad suggestions, workable and impractical plans. Some enterprises, which do not employ their own advertising men, leave their publicity work to an advertising agent, who acts in the capacity of advertising manager for many different enterprises. In former years an agent simply transferred prepared advertising material from the business man to the medium through which this material was to be made public. But the advertising agent of today is an expert, who can plan and carry out an advertising campaign for many different types of clients. In order to do this, he must, of course, have a large fund of commercial knowledge, and a thorough training in advertising methods and the use of advertising mediums.

The most important man in the agency is the plan man who actually organizes the publicity campaigns. He must always be advised on current business and financial conditions, the character and extent of the competing enterprises and the general state of mind of the public. He must be capable of devising a campaign which will be original and distinctive, or a series of campaigns which, while differing from each other, may effectively characterize the firm for which they are planned. Both the advertising manager of a store or other business and the plan man in the agency should have a thorough understanding of the technical and artistic side of advertising. They should know the advantages of the various media of advertising—such as newspapers, magazines, booklets, posters, billboards and displays; should be acquainted with the fields of typography and design; and should be capable of writing their own copy, even though they may leave the actual writing of it to the "copy man."

The copy writer is the man who writes the advertisements. He is responsible for the turning out of brief, simple, accurately worded statements, which will be forceful, original and appealing enough to bring the required results to the advertiser. He should be able to take a few salient facts and, with these in mind, compose advertisements which will make the most profound impression on the reader. The copy writer's work is not, as too many people think it is, merely a stringing off of words. Unless he believes in the article he is advertising, he cannot make other people believe in it. Unless he is sincere and truthful, his advertisements will not be backed up by the goods he advertises, and, consequently fewer and fewer sales will result. He must be, as should every advertising man—honest, enthusiastic, a man of business and also a man of literary and artistic ability.

In advertising it is, above all, personality which counts. Whatever special line he may finally follow, every advertising man must have certain natural qualifications, and certain others which are the result of practical experience. He must be a thoroughly wide-awake individual, alive to every opportunity which may present itself. He must know a good idea when he has one and, having recognized it, he must have the energy and perseverance to work upon it till he has evolved from it an effective publicity campaign. The most successful advertising has been, like most inventions, but one-tenth inspiration and all the rest hard work. Complete mental alertness is necessary, too, in order that he may recognize an advertising possibility and make the most of it. And for this, another quality, originality, is absolutely essential. Originality, imagination and versatility will give distinction and variety to the advertising man's work and will help him to understand and make use of hitherto unrecognized possibilities in the advertising field.

We have several times already mentioned the fact that the advertising man should have real business knowledge and ability; but this point cannot be emphasized too much, for many young men do not realize that the advertising man is, above all, a salesman, and that he must know his article and know his public. If he is to know his buying public he must, of course, know human nature, and he must also have tact, so that he will be able to deal wisely with human nature in the everyday conduct of his business. Then he needs energy and executive ability; a capacity for hard work, and the power to make other people, too, work hard and well.

The advertising man should, of course, have facility in expressing himself in writing, clearly, simply and forcefully, and in preparing material quickly and accurately. If, in addition, he has some artistic ability, he will always find it useful. But more important than all other qualifications are a willingness to learn, a capacity for hard work, real enthusiasm for the work and honesty. Only truthful statements will create confidence in the public toward the thing advertised, and establish a sound reputation for the firm or business.

Many of the qualities discussed above are natural ones—either the prospective advertising man has them or not—but others are the result of training and experience. Training for advertising work can be attained only partly in schools. It is true that high schools, the Y. M. C. A., private business schools and over thirty of the large colleges and universities in this country give courses in advertising; but the student who has taken such courses should remember, when he is ready to start his first actual advertising work in business, that his studies are just beginning, that he will be given, in practical work, infinite opportunities to learn the advertising business thoroughly and that he will get his best training by taking advantage of these opportunities. Experience is much more important in advertising than merely theoretical training, though a certain amount of theory is necessary.

Many men have, till now, entered the field of advertising more or less by accident. Some have come from journalistic work (which is in some respects similar), some from work as salesmen or merchants. It is generally considered desirable for the young man who wishes to enter advertising to have had some experience on a newspaper as typesetter, reporter, editorial writer or all three. In this way he may gain experience in the actual make-up of advertisements, a knowledge of news values and a certain terse, simple style of writing. Some experience as a salesman behind the counter or on the road is also considered desirable, for then the would-be advertising man knows the practical problems of selling. Besides experience in these lines, he should have a fairly good academic education, with some knowledge of science, accounting, economics and history and, above all else, a thorough training in the use of the English language.

To make good in advertising it is not absolutely necessary for a man to have had former experience in newspaper work or selling, provided he is prepared to work hard and to learn from his daily work the essentials of successful salesmanship, and provided he is energetic, resourceful and alive to every opportunity.

Advertising work often makes great demands on one's time and energy. Much of it must be done within a limited time, so that the advertising man must frequently work under high pressure, and far beyond the ordinary hours of the average business man. But the advantages in the advertising field far outweigh these disadvantages. Advertising is a profession where ability is quickly recognized and rewarded. Promotion depends upon accomplishment—the man who does good work is soon given a chance to show his mettle in a higher position. For the person of ability and initiative, advertising work offers great opportunities. It is not a less crowded profession than others, for many have entered it, thinking the work to be more a matter of glib talk than earnest effort—but these men are easily passed by the conscientious and original worker.

The advertising manager and the plan man, of course, have the largest salaries in the field; they can make anywhere from $1,500 to $10,000 a year, and in exceptional cases even more. The copy writer may at first earn only $12 or $15 a week, but later his salary may rise to $35 or $40 and, if he is exceptionally capable and well known, he may earn almost as much as the manager or plan man. Of course, most young men start in subordinate positions, at low salaries; but plenty of opportunity for advancement offers itself to them. The work itself is always fresh and new, and so always interesting, for no two advertising problems can be alike. Besides its great importance in business, advertising has another significance. Advertising men are always awake to the newest things and methods, and these they popularize. By so doing, they render not a little public service, and educate the public taste.

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CHAPTER IX

AGRICULTURE

The importance of the state of a country's agriculture can hardly be overestimated. Agriculture is perhaps the most essential of all industries, because we depend upon it for the thing of the most elemental necessity—food. Without sufficient food, man comes to a complete standstill. To realize the truth of this, we have but to think of the European nations which are at present in so weakened a state, not only because of the losses suffered in the late war, but also as a result of the starved condition of the surviving populace. It can easily be imagined what would happen here, if the great corn fields of the West stopped yielding their annual harvest, if the cattle ranches were neglected, if the millions of men all over the country, engaged in doing their small share toward cultivating the soil, were to suspend their work.

Although agriculture is, strictly speaking, the cultivation of the soil, there are numerous other activities included under that name. Chief among these are stock raising, poultry raising and dairying, which, since they depend so largely upon the condition of the soil, are considered as much a part of agriculture as general farming or market gardening.

The farmer's duties are many and varied. In the old days he tilled the soil, planted and, in time, harvested his crop. But now this no longer suffices. In many cases the soil is exhausted because of the unscientific methods of previous farmers, and so the modern agriculturist studies the various soils of his land and treats them and fertilizes them according to scientific principles, so that their productiveness may be conserved; plants the crops for which the particular soil is most suited; and cultivates, protects and harvests his crops by the newest methods. The general farmer usually keeps some stock and poultry, and these, too, he cares for scientifically, seeing that the animals and fowls are properly housed and fed.

There is a mechanical side to the present-day farmer's work also. Intricate farm machinery is coming into more general use, and naturally the farmer must know how to care for and repair this machinery, for often it is impossible for him to wait till it can be attended to by a mechanic. The farmer's duties lead him into the field of business also. The question of marketing his products is a very important one, and he must keep himself informed of current transportation rates, of the demand for the products his farm yields and of the market conditions in general.

The farmer who specializes in some one product has much the same duties as the general farmer, except that his work is probably less varied and more intensive. If, for instance, he limits himself to the cultivation of a fruit farm, he may not bother with any stock, but he will have an extensive knowledge of fruit growing, and will devote himself to applying this knowledge. The cattle raiser, on the other hand, will concentrate his energies on producing fine stock, and will undertake the cultivation of crops only in so far as these will affect the food supply of his animals.

Agricultural work is hard work, and it is often very discouraging, too, for no other industry is so dependent upon uncontrollable natural factors. Chief among the disadvantages of the business of farming is its dependence upon weather conditions. Too much rain or too much sunshine, a sudden frost or a long drought, may ruin the farmer's entire crops, and bring a year's work to nothing. But though certain weather conditions cannot be remedied, there are others which the progressive farmer has learned to combat. In the orange groves of the South, for instance, "smudge pots," giving forth heat and protective smoke, shield the sensitive fruit from the frosts.

There are also other natural factors to contend with, such as animal and plant diseases and all sorts of insect pests. The farmer is, however, learning to fight these, too, by means of information distributed by the government, upon the advice of experts. Then there are the difficulties which attend the marketing of products. Sometimes a farmer is so far from a marketing center that the cost of transportation exceeds the returns he gets from his goods. At other times there is an oversupply of the particular product the farmer has, and so he is forced to let his product rot, knowing that he will not be able to dispose of it. One more disadvantage on the business side is the amount of capital required to start a farm. Thrift and ambition can, however, do much to help here, and there are various ways, which will later be described, of acquiring the necessary money to buy and operate one's own farm.

In former years, one of the decided disadvantages of the farmer's life was the isolation in which he lived and the lack of social intercourse from which he suffered. But nowadays this loneliness is to a great degree overcome by the fine new roads, the telephone, the radio, and the automobile; in fact, more automobiles are owned by farmers than by any other single class.

The advantages of agricultural work are many. First of all, the farmer leads an active, outdoor life, which makes for good health. Then his work is varied—not only do his tasks change during the day, but a season of heavy labor alternates with a season of lighter work. During the winter season, while he has much time to spare, the farmer has the advantage of being able to attend "Farmers' Institutes," or to take some short practical course in a state agricultural school. The Farmers' Institutes offer lectures by experts on problems of interest to the man engaged in actual farming.

The farmer's is one of the most independent of all vocations. He is his own master, he can do as he pleases, undertake special work of whatever kind he prefers, install whatever innovations he thinks are needed—in a word, exercise his individuality and initiative. Most men are eager for a chance to do this, and farming will most certainly give them this chance, if they undertake the work in the right spirit.

Besides this, there is, or can be, a certain fascination about the farmer's work. His piece of land is like a laboratory, in which he can try experiments of various kinds. Everyone knows of Luther Burbank's interesting work in producing new varieties of flowers, fruits and vegetables. Many farmers do on a lesser scale what Burbank did; for, after all, the work of grafting one sort of growth upon another, of crossing various varieties of some plant and of breeding animals are all experimental work which frequently produces interesting results.

The boy who wishes to go into farming will want to know what financial returns he may expect from his labors. Practically all farmers make a comfortable living; most of them own their land and homes, and some, especially capable men, accumulate a comfortable fortune.

Before he can make anything at farming, the young man needs adequate training. Many of the older farmers laugh at the idea of agriculture being taught in a school. They think that experience alone can teach a farmer his vocation. But the more progressive among the farmers realize that, if agriculture is to be regarded as a profession, its study must be founded not upon one's personal experience alone, but also upon the experience of those who have gone before. Agriculture is, therefore, being taught scientifically. The more education the boy has before he goes into practical farming the better—it has been found—he succeeds. When he has finished high school, it is best for the student to enroll for a course at a state agricultural college or in the agricultural school of some well-known university. These courses are from two to four years long, and their cost is in most cases not very high; many of the state colleges make no tuition charges at all.

Actual practice is in most cases combined with the scientific instruction received at these schools. It is an excellent plan for the prospective farmer to try his fitness for agricultural work by hiring out as a farm hand during the summer vacations. Thus he can gain some experience, test his liking for farming and, in addition, earn some money towards his tuition fees.

For the youth who cannot take a regular course in an agricultural school, there are yet several ways of attaining scientific knowledge and training. Many excellent agricultural papers and journals can be obtained; the United States Department of Agriculture publishes numerous valuable pamphlets, the Farmers' Institutes offer interesting courses of lectures, and short courses lasting but a few weeks are given during the winter season at all state agricultural schools. The farmer does not lack opportunity for acquiring accurate and helpful knowledge, and those who avail themselves of the opportunities offered, and carry out the principles they have mastered, raise the practice of agriculture to the level of a profession.

Probably the best thing to do, for the young man without sufficient capital to start his own farm, is to enter the service of some other farmer as a "farm laborer." He will receive from about $450 to $600 a year, besides his living expenses. If he is thrifty and willing to make some sacrifices, to deprive himself of a number of pleasures for a few years, he can in the course of time save several thousand dollars, and rent or buy a farm. The initial expense of starting work will be rather heavy, but most farmers manage to own their land within a comparatively short time. Some young men start on a small scale along some special line, as, for instance, in poultry raising; in addition, they occasionally render various services to neighboring farmers, and thus get a start, which after a few years may enable them to own a large and thriving business.

Trained men are in demand also, to fill positions as managers of creameries, farms, ranches and country estates. These men may earn anywhere from $2,000 to $10,000 a year, according to the type of service they render. "Tree doctors," nurserymen, horticulturists, fruit experts, foresters and other such professionals receive annual salaries of about $1,000 to $5,000. The veterinary or animal doctor is also closely connected with the general agricultural field, specializing in the treatment of sick animals. After he has followed a course of study lasting from two to three years, and has received a license, the veterinary can earn between $1,500 and $3,500 a year.

The training it would be best for the prospective farmer to undergo has been discussed. This will give him scientific knowledge, but behind his knowledge he must have certain innate qualities which will fit him for the profession of agriculture. Anyone who dislikes outdoor life, who does not enjoy working with nature and who has no love for animals is not the proper type for agricultural work. The boy who does care for nature, for being out in the open, who is a lover of animals and who is strong, active, practical and energetic has a good chance of succeeding as a farmer. He must, of course, be able to do much hard work; he must be able to manage men, for he will probably employ helpers; he should have something of the scientist's powers of observation and sufficient initiative to cope with the unforeseen situations which so frequently arise. He should be the kind of person who likes to do things with his hands—this will help him in his work on the land, with the animals and in his care of the farm machinery. And besides all of these qualities, he should have a certain business sense, without which his hard work will avail him but little—for on the marketing of his product depends his financial success.

More people in the United States are engaged in agriculture than in any other occupation. These people can have the satisfaction of knowing that the rest of the country depends very largely upon them, and that the service they render is of basic importance. There are many professions and trades without which the world could very well get along, but there is no substitute for food, and the farmer, who supplies the world's food, is a worker whom it could not possibly spare.

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CHAPTER X

ARCHITECTURE

The architect of today is recognized as a man of the greatest importance in the community, which at the same time is being served and beautified by him. His profession is that of building, and he not only builds structures of practical use, but he attempts also to produce buildings of artistic appearance, which add to the general beauty of their surroundings. The architect thus has a great responsibility, for not only does he, by his work, express the ideals of beauty and comfort of his time, but he also has a wonderful opportunity to guide the taste of the public along the lines of good design and artistic expression.

At present especially, there is great opportunity for the architect to prove his worth and his importance. Everyone realizes that small residences are coming to be more and more in demand, and the man who can design practical and artistic little houses for the ordinary middle-class worker will be of the greatest service to his time and country.

But architecture does not only mean the designing of structures. It is a very complex art, and the ideal architect should be a sort of combination of artist, scientist and business man, for his duties lie in several fields. First of all, he designs the structure and, for this, artistic and creative abilities are necessary. In addition to drafting the working drawings, writing out in detail all the specifications for its construction and deciding what materials are to be used, the architect plans the general decoration and equipment of the building. He also supervises the actual construction work and, in order to do so successfully, he must be able to handle men, and he must, in addition, have a fundamental knowledge of the various trades connected with building. It is in this phase of his work that the architect turns scientist, for he should have at least a practical understanding, if not a thorough knowledge, of engineering—structural, civil and domestic. By "structural engineering" is meant the science of the use of iron and other materials in construction. Civil engineering concerns surveying, mapping and public works, and domestic engineering includes such matters as plumbing, heating, ventilating, lighting and wiring. The architect with some knowledge of all these occupations is likely to get far better results than the one without, for it is always preferable to be able to supervise the actual work of construction personally. Not only can the architect thus put into his work a certain personal touch, which usually improves the structure, but he can also exercise his ability as a business man. He is quite often entrusted by the owner with the financial end of the building operations and, in addition, he is a sort of arbitrator on occasion—the man who decides any differences which may arise between the owner and the contractor who carries out the work.

Whether one is a general, naval or landscape architect, the same sort of qualities and training are necessary. The general architect designs buildings and monuments of all sorts. The naval architect concerns himself with shipbuilding. Very often, especially in the case of the huge, modern ocean liners, the ship itself is designed, and its construction supervised, by a "naval designer," who has been specially trained for this type of work. Architects of general training are, however, quite often employed to design ships. During the late war they proved themselves so efficient at this type of work that their services were in great demand. But most often they undertake the planning of the interior of the liner—designing the various rooms and spaces, the furnishings and decoration, and supervising the plumbing, heating and ventilating arrangements.

The landscape architect usually undertakes the work of grading, planting and decorating the grounds of public or private buildings. He tries to harmonize the architectural and natural factors so that they will produce a generally pleasing and artistic effect. He does not, as the name implies, plan gardens only, but he is frequently employed to lay out entire residential districts and towns. In fact, town and city planning is being recognized as a distinct division of architecture. It is a branch of the profession which is newer and more promising than perhaps any other. Before this, towns and cities have sprung up without any definite plan, but nowadays people are beginning to realise that they can have safer and more beautiful towns if they will allow competent architects to lay them out in every detail.

In addition to laying out towns, landscape architects are especially active in planning and developing parks and national forests, and in finding new ways to utilize their recreational possibilities. One of the latest developments along this line is the planning of automobile camping grounds for tourists, and this work has been undertaken largely by landscape architects. The United States Forest Service has recently created a new office, that of "Recreational Landscape Engineer," whose duties are to preserve and develop the national parks. The first man appointed to this office was a graduate of the School of Landscape Architecture of Harvard University.

A profession as complex as architecture, which involves a knowledge of art, engineering and business, of course requires a very thorough training. The boy who wishes to enter this profession should have considerable artistic ability and, above all, imagination, for without this, even though he work conscientiously, he will never accomplish anything worth while in architecture. He must always remember that architecture is not just building—which any carpenter or contractor is capable of doing—but it is building which is artistic and which at the same time, with perfect safety and the greatest economy, best meets the needs of the client. Besides imagination and artistic feeling, the future architect should have constructive ability. It is true that sometimes one man of marked artistic ability takes charge of the designing end, and another, more scientifically inclined, attends to the construction details, but it is more desirable for the architect to feel at home in both branches, unless he goes into very specialized work.

It is best for the prospective architect to have a thorough academic training, which will broaden his outlook, acquaint him with the culture of many different countries and give him a solid basis on which to found his technical studies. For this reason it is generally considered preferable for the student to take a college course either before or in connection with his architectural studies, or at least to have had a very thorough preparation in mathematics and French while in high school. In addition to school work, apprenticeship in the office of a practicing architect is excellent training. Here the student comes in contact with actual problems of architectural design and construction and, besides this, he gains much from the experience of the older men about him. Some students, who cannot afford to attend a college or technical school regularly, work in an office during the day and take their courses in the evening, either at some technical or vocational school or in the Extension Teaching Department of some university. Practically every large university in the United States has a school of architecture.

The cost of an architectural education varies greatly. If the student attends one of the university schools of architecture, his tuition fees may range from about $200 to $800 a year, the entire course lasting over a period of from three to five years. But there are courses at technical and evening schools which can be followed at a much lower cost. Numerous scholarships and prizes are annually awarded in most of these schools and by architectural societies, and by means of these many young men are enabled to study without charge, and some even gain the privilege of travel and study abroad, at no expense to themselves. Further information as to schools and the cost of courses may be obtained from the American Institute of Architects, which has a chapter in every large city of the United States.

Boys who work in an architect's office while studying do not receive much pay. Student draftsmen may earn from $5 to $9, or sometimes even $12 a week. Draftsmen and designers earn from $900 to $3,000 a year, though some head draftsmen earn as much as $75 a week, and an architect in charge of an office may receive as much as $8,000 a year. The majority, however, remain draftsmen at a much lower salary. But the advantages of the profession are many. The work is carried on under excellent physical conditions, giving opportunity for both indoor and outdoor activity. As to opportunity for success, there is plenty of it, for the profession offers a wide range for men of different types of ability. Besides this, the profession is one of very high standing, and the man who succeeds in making himself known has much chance for both fame and fortune. Practicing architects who are well known and who are entrusted with very important commissions receive fees amounting to from 5 to 7 per cent of the cost of the structure, which often reaches an exceedingly large sum.

There are other rewards besides financial ones, however. Architects are looked up to as artists and professional men, and their opinion is frequently consulted in matters only remotely connected with architecture. Thus they can, and often do, have a very beneficial effect upon the community. It is in a large measure due to their influence that housing conditions are steadily improving, that slums are disappearing and that safe, sanitary and beautiful houses are coming to be more and more frequently erected. The true architect is never satisfied with his work unless he feels that it will give its owner a maximum of service and pleasure; thus he sets a high example of usefulness to his fellow men, and does his share towards promoting the general welfare.

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CHAPTER XI

ART

The artist, like the poet, is the interpreter of his people's ideals of beauty. The way in which he expresses beauty through painting or sculpture is determined as much by the place and age in which he lives as by his own nature. So it is wrong to think, as many do, that the artist is a man apart from others, that his life and work have no practical connection with those of the rest of mankind. For indeed they have; the work of an artist is, in fact, often the only thing which reaches out from one age into another—which makes a long-gone-by time or a far-distant land real and understandable to us. Perhaps when we see the original or a replica of one of the great Greek statues, we do not know what hero or god of the time is represented, but we do comprehend the grandeur and majesty of the work, and we realize from the finished artistry and consummate craftsmanship the high state of civilization of the nation which produced artists capable of such efforts.

The artist has a double function, for, besides interpreting the spirit of his people, it is his duty and privilege to guide the public taste into channels of purer æsthetic appreciation. By bringing about a keener sense of artistic values in general, the artist helps to bring about also the beautification of the ordinary things of daily life, and so renders an uplifting and lasting service.

The traditional "fine arts" are painting and sculpture. The painter's art may lead him into the field of portraiture, of landscape, still-life, figure or animal painting, or into the painting of general subjects. Whatever special line he undertakes will be determined by the painter's natural preferences and abilities. If, for instance, color appeals very strongly to him, landscape or still-life painting may prove to be his field; if form attracts him more, he may become a painter of animals or of the human figure. The one requisite for an artist is natural talent. The youth without some talent can never, in spite of excellent instruction, attain success in painting. And yet the man with talent may be equally unsuccessful. So much depends upon the temperament of the individual artist, upon the momentary mood of the public, and other changing factors, that it is impossible to say what steps should be followed to attain more or less certain success in art.

A good course of study can be a great help, even though many men have succeeded as artists without much formal instruction. The artist must have good powers of observation, and a sense of rhythm, harmony and perspective. His artistic education will enable him to utilize these natural qualities. His eye will be trained to distinguish subtle color differences, he will learn the laws of perspective and composition and, by an acquaintanceship with recognized masterpieces and by constant practice in his art, will attain a certain technique. Needless to say, the artist who has nothing but technique to show will hardly be great. Painting is not simply a placing of strokes upon a flat surface in such a way as to reproduce an object; there must be life and meaning in the representation. The power of infusing his work with life and meaning is something which no amount of instruction can supply to a man deficient in sensitiveness and emotion, so that the painter should be possessed of these qualities also.

Like the painter, the sculptor's chief need is talent. The sculptor does what the painter does, but in a different medium. To him, form is of the utmost interest and importance—and the modeling of forms is his true business. All artists are craftsmen, for manual work is an essential of all artistic endeavor. This is, however, especially noticeable in sculpture, where the modeling of clay and wax, the pouring of plaster and bronze, the chiseling of marble and other stones constitute a great part of the artist's work. The well-known sculptor, at work upon some large statue, the decorations of a building or the construction of a monument, often contrives to relieve himself of much of the more mechanical portion of his work, by leaving to an assistant the preparation of casts and the carrying out of minor details.

The painter or sculptor is, when he has finished his schooling, confronted with the problem of how to make a living. The young artist who has not yet made a reputation for himself knows well that, if he must depend for support upon the chance sale of an occasional picture, he will not find himself very well off. For this reason some young men temporarily enter the field of commercial art, and others become assistants to mural painters or sculptors. The pay for the latter type of work is not very large, but no young man contemplates remaining at it for long. It is his hope, as he carries on his own work separately, to produce pictures or statues which, when exhibited, will prove salable, and so be the beginning of a reputation. Some young artists find purchasers by chance; some take part in contests and thus bring themselves to the attention of the public. A portrait painter, starting with one sitter, may in time succeed in establishing a clientele of people of means who will commission him to paint their portraits. A sculptor, who may begin by submitting some design in a public contest, may end by being commissioned to execute imposing monuments.

The possibilities of art as a profession are unlimited, provided one has considerable talent, training and sufficient endurance and love for the work to stick to it during the almost inevitable "lean years." As has been said, success cannot be guaranteed even to the talented, but this is more or less true of any sort of work. Outside of the fact that the artist may, in spite of ability, be destined to remain forever poor, there are practically no other disadvantages in the profession of art. The successful artist has the opportunity of gaining wealth, fame and high honors. Art offers, too, wonderful opportunities for cultural development, and for the expression of the personality of the artist.

There are numerous good art schools where the student can receive his training. Usually these schools do not demand of the student any certain degree of previous academic education but, as the artist works with head as well as with hands, he will find a good general education useful. Thorough art courses are given also in the Departments of Fine Arts of large universities and by private teachers. The student may take regular day courses, or may study during the evening, and his studies may cost him but the price of his materials if he attends free classes, or, if he studies and travels abroad, thousands of dollars. Very instructive also are lectures and exhibitions in museums and galleries, to which students are in most cases admitted free of charge. Many scholarships for study, here and abroad, are annually awarded to the winners of contests arranged by art schools and societies.

Painting and sculpture are what are usually considered the higher forms of art, but there is, too, art which serves more commercialized purposes. For the artist of imagination and dramatic sense, illustration offers a splendid field. The illustrator depicts events or scenes narrated and described in books, magazines and other publications. Above everything else, his drawings should have character—should immediately impress the prospective reader with their meaning, even if the technique is not faultless. Illustration makes use of talents of various kinds. Beginners in the field of art can often find employment as illustrators, and men of established reputation frequently consent to illustrate some book for a substantial consideration.

The illustrator has some difficulties to meet which the painter has no occasion to know. He must, for instance, realise the difficulty of reproducing his work by photomechanical processes, as will have to be done in the case of book and magazine illustrations. The limitations in these processes, causing sometimes distortion of the picture through its reduction in scale, through hasty engraving and printing and faulty ink, should be kept always in mind. The artist must remember that a certain special technique, less subtle and complicated than that which he might employ for an easel picture, should be used in illustration. A further difficulty lies in the fact that the artist is often required to produce suitable illustrations within a very limited time.

For the work of illustration, the artist should have a good general art education and a vivid imagination. A man may receive from $30 to $400 for one canvas, and his financial success will depend upon the demand he succeeds in creating for his work. Drawing for the newspapers is also a profitable field. The cartoonist or caricaturist should have obtained a general knowledge of the fundamentals of draftsmanship, and should be a person of many and original ideas. Probably the best way for the would-be newspaper artist to secure a start is by obtaining some kind of position on a large daily paper, preferably in the art department. The chief difficulty in drawing for the newspapers is the short time at the artist's disposal. A topic may be of vital interest one day, and stale the next, and the cartoonist must, for this reason, be a fast worker. Naturally, he should be a person of intelligence, capable of keen analysis and of effectively employing satire, his best aid. He should regard his work very seriously, for public opinion is to a surprising extent molded by the newspaper cartoon. The average newspaper artist makes from $2,500 to $7,500 a year. The extraordinarily successful man, who can increase his profits by selling one cartoon to numerous newspapers (syndicating), may earn as much as $40,000 or $50,000 annually.

The commercial designer is a type of artist in great demand. He may be a "free lance" or may be employed by some business firm, in a salaried position. His work lies partly in the field of advertising, for it is his duty to make, for newspapers, magazines, catalogs and other advertising media, drawings which will attract prospective purchasers. This work requires artistic training, and very often some training in advertising principles also. The artist must be familiar with the general psychology of advertising, and should be skilful enough to turn out work which will appeal to the particular class his employer wishes to reach. The salaries in this field are generally good, and in some cases are extremely high. As in illustration, the effectiveness of the work, and the reputation of the artist are the bases of his remuneration.

Some people imagine that only "art for art's sake" is worthy of the name. Commercial art, however, conceived and executed in a sincere spirit, can be just as fine and uplifting a factor in the lives of ordinary people, who have not yet learned to frequent exhibitions, as the works displayed there. There is room for, and purpose in, a good poster or cartoon as well as a masterpiece of painting or sculpture.

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CHAPTER XII

AUTOMOBILE VOCATIONS

Twenty years ago the automobile was considered a fad; today it is the basis of a great industry, which furnishes employment for thousands of men. The number of automobiles in use in the United States increases every year. Although this does not necessarily mean that the number of professional drivers is bound to increase also, since many people prefer to drive their own cars, still it is evident that there will be a steady demand for men who are thoroughly familiar with motor vehicles. Such men are needed to care for and repair the machines. This is much more difficult work than that of driving; it is the kind of work which requires more technical training and mechanical experience than the average car owner possesses. For this reason the well-trained automobile mechanic and the man doing expert work of a special kind on automobiles will probably become more and more in demand, as the average owner realizes the importance of prompt and thorough attention for car troubles.

There are several classes of motor vehicles—pleasure cars, commercial automobiles, public service omnibuses, taxicabs, farm tractors—and the operation and care of these afford various types of trades. We naturally think first of the chauffeur and truck driver. Their duties include driving the car and keeping it in generally good running condition. It is most important that the chauffeur know how to give the car the proper care to keep it clean and in order, and how to make minor adjustments and repairs when these are needed. Usually he is not expected to know how to remedy serious trouble, but he should be so familiar with the construction of the car and with the functions of its various parts as to recognize a fault before it has had a chance to develop. If its correction is undertaken in time by a skilled mechanic, much time and expense will be saved.

Driving a car includes more than the actual work of starting, running and stopping it. The good driver must have a thorough knowledge of the general rules and regulations of the road, and must be familiar, too, with the local ordinances as to driving and parking the car. It is not enough for him to be able to run an automobile; he must know the speed limit, the rules as to lights, licenses, tourists' privileges and right of way. The chauffeur should not be of a nervous temperament. He must always be cool and alert, cautious and equal to a sudden emergency. He must drive carefully, taking all possible precautions for safety, and in case of unforeseen danger should be able to remain in control of himself.

The work of the chauffeur is light, but frequently his hours are long and irregular. This is especially true of the chauffeur in charge of a private car. He is frequently obliged to be at his job from morning till very late at night, but during much of this time he is idle. The truck, taxi and bus driver usually have more regular hours. The truck driver is sometimes obliged to combine other duties with that of running the machine. In case he runs a delivery truck in the city, or a rural motor truck express in the country, he frequently loads and unloads goods and makes personal delivery of them. The operator of a farm tractor is expected to know how to care for the machine, and generally requires some special training.

The chauffeur's work affords him a generally healthful open-air occupation. There is, of course, some element of danger connected with it, but a really capable and careful man need fear very little on this score. There is also some disadvantage for the man who is likely to suffer from physical exposure, but such cases also are rare. On the whole, the work is light and pleasant and pays quite well. The average chauffeur or truck driver earns from $25 to $50 a week. The taxicab driver who owns his car may, of course, receive more.

There are several ways in which to acquire sufficient knowledge to operate an automobile properly. The prospective chauffeur may take a course at a trade school or automobile school. Here he will be taught something of the mechanism of the car, and will learn, by practical experience, how to drive it. Some automobile manufacturing concerns teach one, free of charge, or for a small fee, to run their cars. Many young men working as helpers or mechanics in a garage learn there to drive and care for a car. The cost of a school course in driving is not high, seldom going above $20 or $30, and lasting a few months at the utmost.

The work of making important repairs upon an automobile is usually left to a well-trained mechanic, who is employed either in a garage or repair shop, or is himself the owner of one of these. The mechanic overhauls, repairs and adjusts all kinds of cars and their various parts. The boy who wishes to become an automobile mechanic should have had some training in a trade school. He may then work as a helper in a garage or as a repair-shop man, and when be has acquired some experience, and ability to work well and rapidly, he can qualify for a position as a mechanic at a salary of from $30 a week up. The work of the mechanic is varied and not hard, though his hours are apt to be irregular if he works in a small town.

Besides the general mechanic, there are a number of experts along different lines, who are found in service stations, garages and repair shops. The expert on electric starting and lighting service installs, cares for and repairs motors and generators and other parts connected with these. For this work, considerable technical knowledge of electricity is required. In order to do the necessary reading to enable one to keep up with the improvements constantly being made in this field, a good general education is desirable.

The ignition expert attends to the testing and maintenance of certain electrical devices which demand much care and attention. He sees to the proper adjustment of the current supply, and should be familiar with electric wiring systems. The storage-battery repairman attends to the charging and rebuilding of batteries. He should have a practical knowledge of electricity and chemistry. The tire repairman's duties include the treatment of tires in such a way as to be productive of the greatest mileage and the least amount of trouble possible. All these men should have a general knowledge of automobiles and their parts and should be especially capable in their own particular branches. Their salaries are generally good, ranging from about $30 to $75 or $100 a week.

Many men are not content to remain employed in a subordinate position, but wish to branch out for themselves as public garage or repair-shop owners. Such men should have sufficient knowledge of automobiles, and the work of putting them in condition, to be able to supervise the work of their employees.

Such knowledge will help them greatly on the business side too, for it will enable them to estimate correctly the time and cost of making certain repairs. Naturally a business sense is a necessity for the garage owner, as is the ability to handle men. It is impossible to say what financial returns the garage or repair-shop man may expect; these will depend upon the location of the shop, the quality of service rendered and the amount of business done.

No one should enter any of the occupations connected with automobiles unless he is a mechanically inclined person. He should understand also that indoor work on automobiles is sometimes detrimental to the health, because of the fumes and gases emitted by the machines, and the outdoor work sometimes entails danger of accidents. Otherwise the automobile vocations are desirable ones for the well-trained, capable man. The work is interesting and varied, the salaries are good, the demand for really competent people is steady.

Training for general mechanical work on automobiles may be obtained in the various public trade schools existing in every large city. Various private schools, evening high schools and public institutions also offer courses in the driving, repair and construction of automobiles. The course given at the West Side Y. M. C. A. Automobile School, in New York City, is considered a very fine one, as are Y. M. C. A. and K. of C. courses in many other centers throughout the country.

Whether the boy wishes to become a mechanic or looks towards owning a garage or repair shop, it is well for him to know as much as possible about automobiles. For this reason he should do all the shop work and road work possible, while studying his trade. A thorough knowledge of automobiles combined with ambition can open up to him very wide fields of remunerative work.

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CHAPTER XIII

AVIATION

Less than twenty years ago no practical flying craft had yet been invented. Even after the Wright brothers had succeeded in constructing a machine which made aviation a reality for man, flying was thought too dangerous to be considered seriously as a means of locomotion. It was with the outbreak of the World War that aviation first came into its own. At a time when every available means for deriving information of the actions of the enemy and of one's own widely scattered troops was being sought, aeroplanes manifested their great usefulness. The work done by aviators in reconnaissance and combat brought them into the foreground of public interest. That interest was still at its height when the war ended, and the general public, by now grown used to the idea of flying, began seriously to consider the peace-time aspects of aviation. The fact that flying machines are now being used for commercial purposes, and in the semi-official as well as military service, renders aviation not merely a branch of the army, as it was formerly to a large degree regarded, but an independent profession of wide scope and opportunity.

The two major divisions of aeronautical work comprise the profession of the engineer and that of the aviator, or pilot. Upon the engineer depends much of the actual progress of aviation. It is his duty to design and construct aeroplanes, and to work constantly with the object in view of making aircraft more trustworthy vehicles. For this reason the engineer should be a man of thorough scientific training. In his efforts to bring about improvements in the construction of various portions of aeroplanes the engineer will be obliged to do much work of an experimental nature, and he should be technically equipped to carry on research work of a highly scientific kind. Many aeronautical engineers have been recruited from the ranks of automobile engineers, as the work in these two branches is somewhat similar. However, the special problems with which the aeronautical engineer must contend have resulted in the establishment of separate departments of aeronautical engineering in various technological schools.

Besides the engineer, who plans the aeroplanes, a corps of trained mechanics are needed to work upon the various parts of the planes and to keep them in condition. Engine mechanics, electricians and repairmen carefully examine the aeroplane's power plant before each trip, and make all necessary repairs at its conclusion. Riggers, or planemen, care for the plane itself; seeing to it that wings, ropes, wires, safety apparatus and all other such portions are always in perfect condition. Inspection of the plane is, in fact, one of the chief duties of the mechanics. Every part must be carefully gone over before and after each trip, for in aviation it is fatal to take chances of any sort. It is imperative that the mechanics be conscientious, accurate workers, for carelessness produces accidents.

The pilot is the man who has charge of the machine on its actual flying trips. He must, of course, know how to handle his machine under all conditions. Many pilots are extremely able fliers, but have so little knowledge of the mechanical portions of the plane, outside of the various controls, that they are unable to help themselves in case of engine trouble. Others, however, can not only steer their planes and land properly but have sufficient knowledge of the construction of the engine to be able to make some necessary repairs in case of unforeseen emergency. This type of aviator, who combines the knowledge of the pilot with that of the mechanic, is sure to be in increasing demand, as flying becomes more general.

The aviator will find openings not only in the military and other governmental services but also in the commercial field. A surprisingly large number of governmental departments utilize aircraft in various ways. The uses to which the army, navy and marine corps put aeroplanes in time of war are, of course, well known. But the official peace-time activities of aviators probably receive much less general attention, though they are exceedingly noteworthy. The U. S. Post-Office Aerial Service, established about three years ago, maintains air lines between several large cities, and the planes on these lines fly on schedule time and in all sorts of weather, with a record of very few forced landings and no serious mishaps.

The Forestry Service maintains an aerial forest patrol, to observe forest lands, and by this observation to prevent devastating fires. The Coast Guard has an aerial corps for the protection of life and property at sea. The Weather Bureau utilizes aeroplanes for the gathering of meteorological data. Other bureaus also employ aircraft, and pilots and mechanics are needed for work on all these machines.

Commercial flying also offers opportunity to many men. There are numerous aerial transport lines which undertake the rapid transportation of passengers and freight. It is no longer considered remarkable for a man having an important business appointment in a distant city to travel there by aeroplane, nor is it unusual for perishable food products to be transported from one part of the country to another via the air, in a comparatively few hours. As people come to realize more and more the commercial possibilities of the aeroplane, the demand for competent aviators, aeronautical engineers and mechanics is bound to increase.

All aviators, no matter in what branch they may be engaged, must have certain natural qualifications. They should, first of all, be physically fit. The aviator's work puts upon him a great strain, and none but a vigorous and strong-nerved man should attempt it. Good vision and hearing, perfect respiration and circulation, a strong sense of equilibrium and a delicate sense of touch are all necessary. The aviator must be a cool person, who will at the same time be courageous and cautious. He must have plenty of initiative and be able to come to a quick and yet sound decision in an emergency. The civilian aviator, who knows his machine and who has good judgment and confidence in himself, will probably get along very well. The military pilot must, in addition to physical endurance, coolness, quick perception and the ability to act quickly and well, have some knowledge of military matters. The aerial observer, who in time of war accompanies the pilot on reconnoitering and attack expeditions, is the man who has a really expert knowledge of military affairs. The military pilot should, however, in many cases be able to change places with the observer, and so he should know how to operate the wireless and radio outfits with which the plane is equipped, and how to take photographs from the air.

The chief reason for the objections which are made to aviation as a profession is the danger which it is thought to entail. It is true that there have been many accidents in the past, and that some still occur. When one considers, however, the various factors which are daily lessening the chance of the occurrence of accidents, and when one considers also the actual accomplishments of aircraft, the fear of danger is likely to diminish. In the days of the pioneer aviators, when the building of aeroplanes was more or less a matter of experimentation, it was no unusual thing for the plane to break under the aviator's weight, as it ascended. Nowadays, of course, such things do not happen. The aviator's chief perils arise from the dangers of carelessness, from engine failure and from a lack of accurate meteorological information. Carelessness is the worst sin any airman can commit. Many accidents could have been avoided if, before flight, the planes had been thoroughly examined, and if the pilot had manifested more respect for the air. Nerve and daring are necessary things in their place, but flying is, after all, a science, and must be practiced accurately. The aviator who takes chances unnecessarily invites accidents, and the cautious man will eliminate one of the greatest perils of flying.

Engine failure has been another frequent cause of accident, but this, too, may be overcome. More trustworthy motors are being devised by aeronautical engineers, and there is no doubt, also, that soon many planes will be equipped with multiple engines, so that, in case one becomes disabled, another will be at hand. The third danger of aviation lies in the fact that there are certain areas of disturbance in the air, and that, when he enters upon one of these, the pilot may find himself so deflected from his course as to be forced to land in an unfavorable spot. Bad weather also, has its perils, in unexpected winds and thick fogs. But even these dangers are being overcome. Airmen have learned that if they fly sufficiently high they will greatly lessen the chances of entering upon regions of disturbing air currents. Scientific study of the air is also being pursued, and it is expected that much valuable information will be obtained in this way. Then, too, mechanical improvements in the craft are bringing about a greater amount of automatic stability, and so increasing the probabilities of the machines being able to right themselves if upset by strong winds. Aviators, too, as they learn more about the natural laws of flight and as they obtain greater skill in the operation of aeroplanes, will do much to lessen the perils of flying.

For men who actually have the desire to fly, who are of an adventurous and yet cool temperament, who are quick and careful, and who have judgment and common sense, aviation offers many opportunities. Men may enter the naval, military or some other branch of government service, they may become civilian fliers and they may teach or do exhibition flying. When a pilot's license, which is granted when one has successfully passed certain practical tests given by the Aero Club, is obtained, interesting and lucrative work offers itself to aviators. Aviation is not yet one of the crowded professions and, as there is no doubt of its being a very rapidly growing one, the demand for competent workers along the aeronautical lines will probably continue to be active. The salaries in the aeronautical field are good—mechanics are paid from $30 a week upward, engineers make several thousand dollars a year and pilots have opportunity to do likewise.

Whether the boy intends to become a mechanic, engineer or aviator, it is essential that he have the best and most thorough training possible, for absolute accuracy and the highest degree of knowledge are required in aviation. For this reason many people urge that the pilot should be a college-trained man, but others consider that the degree of previous education is not important as long as the pilot possesses initiative, resourcefulness and judgment, in addition to the necessary technical knowledge.

There is no doubt that aviation is a profession of steadily growing importance. As flying becomes more general, laws are made to govern air travel and landing fields are provided by the government, as will have to be done, the dangers of aviation will no doubt become negligible, and the air will become a means of livelihood for a large number of people.

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CHAPTER XIV

BANKING

Where the conditions of life are simple and people have few wants, the goods and services they need are obtained by means of direct exchange, or barter. Thus, one person may offer grain in exchange for meat, and another wood for cloth—but in every case the transaction is an extremely simple one. Where the conditions of life are more complex, however, business transactions are more involved. If goods or services of any sort are needed, money, or that which represents money—credit—is offered in exchange for them. In small everyday exchanges, money is frequently used, but the instruments of credit form the basis of practically every large business transaction. It is the duty of the bank to supply the money and credit with the help of which these transactions are carried on. Banks not only furnish individuals and corporations with credit, by buying their notes, bonds or stocks, but they perform also the function of taking care of the money of depositors. Taking care of the funds of these people does not mean keeping it locked away in a safe. It means investing the money in securities and making loans with it.

All banks are not of the same kind. The most important type is the commercial bank, which furnishes business men with credit. The savings bank serves as a depository for private or public funds, for the privilege of investing which interest is paid the depositor. The investment bank usually makes loans upon real estate, through mortgages. Bonds and stock brokerage houses extend credit to corporations by buying and selling the stocks and bonds these firms issue. There are also general banks which combine the main features of each of the above. They have a savings department, invest in real estate, stocks and bonds, and make loans on good security.

Every bank has a number of departments which carry on its business. First may be mentioned the receiving department, through which money is deposited by clients. The paying department pays out the bank's funds in exchange for commercial paper. The note and discount department makes and keeps track of loans, investigates the borrower's credit and makes sure of the worth of the securities he offers. The bookkeeping department keeps accurate records of all transactions of the various departments, and so guards against error or fraud. The collection department attends to the collecting of interest and principal due on notes and other loans. The exchange department deals in foreign and domestic currency. The clerical or correspondence department is also an important one. The newest department of the modern bank is the advertising division, which attempts to increase the number of the bank's clients through publicity methods.

In these various departments there is, of course, opportunity for many workers. Though the organization of a bank may seem rather complicated, it is a very systematic one, so that, whether banking houses be large or small, the men employed by them will do much the same type of work, though on a comparatively larger or smaller scale. The chief executive in a bank, the man who is most frequently given the title of "banker," is the president. As the head of the board of directors, he exercises a general supervision over the policies of the bank. With the help of the other directors, and also upon his own responsibility, he determines investments and loans, and otherwise controls the bank's transactions.

The private banker, head of his own banking house, holds in it a place similar to that of the president of an incorporated bank. It is, of course, no easy matter to hold such a position, which is one of the greatest responsibilities. The bank president must have many qualifications. He must, of course, have a thorough knowledge of banking—but this is a subject of tremendously wide compass. A knowledge of economics, finance and accounting are all included under the name of banking. Then, too, the head of a large banking house must be an expert on investment securities, must keep himself thoroughly informed on the daily condition of domestic and foreign trade and must know the laws of banking practice. All this means that he must be a man of brains, and of some education. A high grade of executive ability, and a strong and impressive personality, are also most important requisites. But, above all, he must be a man of good character. Absolute integrity is essential in the profession of banking, and this holds good not only for the head of the banking house but for every employee down to the errand boy.

Next to the president in importance is the cashier, who actively supervises the business management of the bank. He is responsible for the funds of the bank, and is the man who signs all notes issued and contracts made. He also should have as thorough a knowledge of banking as possible, should be a good business man, and a man of upright character and unquestionable honesty.

The paying teller heads the paying department. All money paid out by the bank goes through his hands. He should, however, not make his work merely a mechanical handing out of money. He should, through his work, be able to keep himself informed of the business conditions of the community, and of the business methods of the clients who draw funds. In this way he can make himself a valuable man on the bank's staff—one whose word and opinion will carry weight. In a small bank, the paying teller keeps an accurate account of all money paid out, entering each item, and at the close of the day making a complete statement of the transactions completed. In a large bank this portion of the work is usually left to assistants, and the payment teller does nothing but pay out funds.

The receiving teller receives deposits made by customers, entering these in the depositor's pass book, as well as making a record of them for the bank's bookkeeping department. The discount clerk enters in a special book all notes and discounts; the collection clerk keeps account of drafts and time notes and the date of their maturity; and the correspondence clerk attends to items sent or received by mail. In small banks many of these functions belong to one or two men; in larger houses, however, there is a staff of variously titled employees among whom the work is divided.

The bookkeeping department of a bank is an extremely important one. This department keeps a record of all transactions carried on by the bank, and of its resources and liabilities. In a large bank there are numerous bookkeepers, who do the routine work of the department, and a head bookkeeper, or auditor, who supervises it. The head bookkeeper must, of course, be a skilled accountant, and also a man who understands the details of the bank's business activities. He should be a man with executive ability, for his position is an important one and involves the supervision of a number of people.

The chief requisite for the person who wishes to enter the banking business is good character. In banking, it is other people's money which is constantly being handled, and the banker can take no risks in choosing his employees. Men of strong moral fiber and absolute honesty are the only ones wanted in this business, for there are many temptations to the worker in a bank or brokerage house. Intelligence, the ability to figure quickly and accurately and the ability to think clearly and form sound judgments are all necessary. The young man who wishes to work in a bank need not be of the creative type; most of the work is more or less a matter of routine, but this does not mean that it should be done in a mechanical manner. In order to rise to an important executive position, the young man must have power of independent thought, and be a person of initiative. Personality is an important factor in banking. The man of courtesy, tact and the ability to create good will and confidence has a fine chance of rising to a high position, if he combines with these qualities integrity and general banking knowledge.

Most bankers believe that the best time for a young man to begin his work in this field is at the age of about eighteen or twenty. And many do this, starting as messengers for banks, and working their way into positions of responsibility. For the minor positions which a boy is apt to obtain in a bank, not much preparation is needed. He should have a high school education, be rather proficient in mathematics and be a conscientious worker who will be able to keep silent about business matters, after hours. If a boy wishes to start in as a clerk, he should at least know something of the nature of ordinary business documents; he can learn about these, and obtain some training in bookkeeping, commercial law and other business matters at most business schools.

Banking is usually taught in connection with courses in commerce in the universities. The American Institute of Banking, with branches in every important city, also offers practical courses in the subjects connected with banking. Graduates of the schools mentioned are likely to obtain somewhat better positions than young men who come less well prepared; but actual experience in the bank is the best way of preparing for an important position. The banks realize this, and some offer their employees a chance to work in various departments and so acquire all-round experience.

There are very few disadvantages connected with banking. The work is, of course, indoors and sedentary, but it is carried on in pleasant surroundings, and the work itself is not very difficult. For bank messengers there is some element of danger, and there is some moral danger, too, in the bank employee's close contact with the methods of speculation and in his contact with large sums of money. Advancement in a bank is usually very slow, but for a man of marked ability there will be much opportunity for rising to a place of trust. Banking is also a business which is so necessary for commerce and industry in general that it usually offers the bank employee as great an amount of security as could be expected in any position. Salaries range from about $15 a week for office boys, to from $1,000 to $1,500 a year for clerks, and about $2,200 and upward for tellers and bookkeepers. Bank officials are frequently very highly paid, with incomes of $10,000 or more annually.

The public service which banks render in promoting business and encouraging thrift is of the utmost importance, and men in the banking business may feel that they are doing much towards promoting the prosperity of their country.

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CHAPTER XV

BOOKBINDING

In the days when books were produced by the slow, laborious hand processes which preceded the invention of typesetting machines and large-scale printing presses, bookbinding was an important craft.. Bookbinders were for the most part artists who gave special and loving attention to each book which passed through their hands, designing and producing for it a cover which would stand the test of time and hard use, and which would be at the same time, a thing of beauty. When the newer machines made the printing of books on a large scale possible, and thus brought about the manufacture of large editions of cheap books, bookbinding became less of an art and more of a trade. Special machines for the quick and cheap binding of quickly and cheaply produced books replaced, to a great extent, the hand worker. Within recent years, however, interest in fine hand-made bindings has reawakened, and the artist-craftsman has come back into being as a special binder of rare and valuable books.

Bookbinding is one of the lesser arts, but, when undertaken by the true craftsman it results in the production of some very fine specimens. The bookbinder receives the loose printed sheets of new books and carries out the numerous processes necessary for the completion of these books. In commercial binding, one need be only a skilled operator of the machines which do the work of putting the books together and covering them. Fine special binding, however, requires skill in carrying out the required operations almost entirely by hand. First the large sheets are properly folded, with great care and accuracy, so that the edges are as even as possible. Then if there are any separately printed or engraved plates, these are inserted in the proper places. After this, the binder gathers the various "signatures," or sections of folded sheets, and presses them into compact form by means of a machine in which they remain for some time. The signatures are then sewn. In the case of fine bindings, the sewing is generally done by hand, to insure careful and thorough work. The edges are then trimmed, and the book rounded and backed by being pressed or pounded, so that the front becomes concave and the back convex in shape. This process must be gone through before the book can be covered or opened flat. Finally comes the casing in, or covering, and the artistic finishing of the book.

It is in the designing and finishing of fine leather covers for books that the bookbinder can give expression to his artistic talents. After an artistic design has been worked out, it must be transferred to the leather. To do this, the design is first traced on the cover with a pencil, and then pressed into the leather by means of heated tools. The impressions thus formed are then either left "blank" or finished in gold. The process of embellishing the leather cover of a book with a design is known as "tooling." When the edges have been gilded, end papers inserted and the leather cleaned and polished, the book is finally ready to leave the binder's hands.

Not every binder carries out all the processes mentioned. Some are specialists in gilding, others in casing in and others in tooling. In commercial binding the work is very highly specialized, each man concentrating upon one definite operation. In special binding, however, the binder is supposed to be able to bind books completely—from the folding to the tooling stage. The special binder also undertakes the repair and rebinding of rare old books. This is work which requires even more expert knowledge than does the binding of new books. An old book which is to be repaired and rebound must first be taken apart carefully. In doing this, the greatest care must be exercised not to damage further the probably fragile pages. Then torn or loose sheets must be pasted into their proper places, and soiled portions cleaned; after which, the already enumerated processes of binding are gone through, with special care and attention.

In order to become a successful bookbinder specializing in fine work, it is necessary for the student to develop a high degree of accuracy in his work. One slight slip of needle or tool is sufficient to spoil a piece of work into which much labor has already been put. One cannot afford to make such mistakes, which waste time, energy and material, so the power of concentration must be cultivated, in order that, by accurate attention and great care, sureness of hand and taste may be acquired. Neatness and cleanliness are very important too, as are a thorough knowledge of leathers and methods of working them. And above all, the bookbinder should have artistic talent, a knowledge of design and the ability to give his talent practical expression through design. If he has all these qualities and, besides, a real love for his craft, he will no doubt produce work of merit. But of course the production of the work alone is not sufficient. He must be gifted with some business ability also, if bookbinding is to be a profitable vocation. A skilled worker in commercial bookbinding is paid from $35 to $50 a week. The skilled man who specializes in a higher type of binding can demand larger returns, although he may not begin with very high wages.

The high grade of work which it is necessary to do in order to be able to charge high prices requires very thorough training on the part of the bookbinder. The student who wishes to become a professional bookbinder should also take the opportunity to see as many artistic bindings as possible. This he may accomplish by visiting the collections of finely bound books to be found in large museums and libraries.

Besides some training at a school, where the principles of design and decoration may be studied, apprenticeship in a good shop for a few years will be excellent preparation. Here the student will have plenty of opportunity to observe skilled and experienced men at work, and at the same time become accustomed to doing actual binding. As an apprentice, he will, of course, not earn much, but he will be gaining valuable experience. Even after he has passed through the stage of apprenticeship, the bookbinder who sets up in business for himself may find it hard to dispose of his wares. The period during which he is still too unknown in his field to be earning much will be found to be the chief difficulty with which the bookbinder will have to contend. Once he has made some reputation for himself as a skilled and artistic craftsman, he will find no disadvantages in his vocation. It is pleasant work, affords an artistic means of self-expression and commands ample remuneration. Besides this, there is always a chance of making a name for oneself as an artist, and there is, furthermore, the satisfaction of knowing that one is preserving the life and usefulness of valuable books.

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CHAPTER XVI

BUSINESS OCCUPATIONS

The work of distributing the products and manufactures of a country is undertaken by its business men, who buy these products from their producers and sell them to the consumers. All the operations connected with the transfer of goods from their source to the ultimate consumer come under the heading of commerce. The more or less direct transfer of these goods to the consumer through the wholesale and retail business houses is known as "merchandising." The merchant renders the public an incalculable service in assembling goods so that consumers may at any time and in any place be able to obtain them. Without some central depot of exchange, civilized life would be almost impossible. Even the tiniest hamlet has its general store, where such goods as would otherwise not be procurable in the neighborhood may be obtained in exchange for money or its equivalent in produce. Commerce is, then, one of the most important factors in the life of a nation, and merchandising, the definite work of procuring goods and selling them to the great buying public, is its chief function.

The end and aim of all merchandising is the selling of goods to the consumers who want them. But before goods can be sold to the public by the business man, they must be purchased by him. The merchant is a middleman, buying goods to sell at a profit. Every business has its buying and selling departments. The chief man in the buying department is the merchandising manager, who is responsible for the goods bought and the profits they afford the firm. The merchandising manager must be a man of unusual business ability. He must have an extensive and thorough knowledge of merchandising of various sorts, and should know how to carry out large business transactions. He is a director of the activities of the men subordinate to him—determining and supervising their work. The success of the business is dependent chiefly upon him. If his buying policies are sound and well carried out, the goods bought will readily be disposed of, and this will show in the receipts of the firm; if, on the other hand, his policies are of the wrong sort or his transactions poor ones, a slump in the receipts will betray these facts. The merchandising manager is, therefore, judged by the business his firm does. The great responsibilities of this position make it one to which only an experienced man who has already demonstrated his ability is appointed.

The merchandising manager is, as has been said, a director—a man who formulates policies and supervises the work of those who carry them out. The men who do the actual buying for a business house are known as buyers. A buyer is generally a specialist in one line of merchandise—he buys silks, groceries, leather goods or whatever the merchandise of his department may be. He must know his own line of goods thoroughly, and as much as possible of other lines connected with it. He must be a keen judge of values, knowing not only the real worth of the article but also what the market value will be. He must not only be able to discriminate between good and bad value, but should know where and when to buy, and in what quantity. His business ability, his judgment and taste, should be of the best. In order to become a buyer, plenty of common sense, a thorough business training, poise, tact and intelligence are necessary. Usually the buyer rises from the ranks of those salesmen who show themselves to be of unusual ability.

The positions of buyer and merchandising manager are extremely responsible ones and, so, strenuous and difficult. But they offer splendid opportunities to men interested in getting ahead in business. Very often they open the door to partnership or directorship in a large and prosperous concern. Buyers and merchandising managers are usually very well paid. Even when they are employed by small houses, their salaries amount to several thousand dollars a year, and in large houses their salaries are extremely high.

The work of the sales department consists of the care and disposal of the stock. At the head of this department is the sales manager, who occupies a position parallel to that of the merchandising manager. Sometimes, in fact, the merchandising manager fulfils the functions of the sales manager. The latter quite frequently directs the activities of the advertising department, which exists simply for the purpose of increasing sales. If he is employed by a wholesale house, he plans sales territories and directs the traveling and inside salesmen. If he is with a retail firm, he supervises the sales policies, plans the selling campaigns and superintends the work of the selling staff. His ability is also judged by the tangible results in increased business and profits. In order to succeed, he needs about the same qualities as the merchandising manager. A thorough knowledge of merchandise, business ability and the specific qualifications of a good salesman should all be his. The sales manager is sometimes promoted from a position of salesman or buyer, and at times is drawn from the advertising department.

The men with whom customers come into personal contact, and through whom the final transfer of goods is effected, are the salesmen. The principal duty of salesmen is, of course, selling goods, but the care of stock should also be mentioned. The salesman, whether he travels or works behind a counter, is expected to have a systematic method of keeping his stock. He should know all there is to be known about the particular goods he is selling. In this knowledge he will have a valuable asset, for it will enable him to make more impressive arguments than he could otherwise find. Besides this, he should be thoroughly versed in the principles of salesmanship, and should have a good command of English. In the discharge of his duties he will be called upon to offer convincing reasons as to why certain articles should be bought, so he should be an intelligent, effective and ready talker.

One of the greatest assets of the salesman is a pleasing personality. There are many things which go to make this. One of the most important is a good appearance. This means neatness, cleanliness and a quietly cheerful and helpful manner. The man who understands human nature, and who is willing to learn and anxious to serve and please, will usually succeed in making a pleasing impression. Diligence and perseverance are exceedingly necessary qualities also, and honesty is essential in the salesman's make-up. Unless he speaks with sincerity and makes only true statements concerning the goods he is selling, he cannot hope to gain the confidence of the buyer and, though he may sell an article which he has misrepresented, the customer who bought it will undoubtedly never give him another order.

It may seem that a great number of qualifications of which a salesman should be possessed are mentioned. But these many qualifications are all necessary in order successfully to carry out the various steps in making a sale: the approach to the customer, upon which depends a good first impression; the talk concerning the merchandise, in order to interest and persuade the customer; and the close of the sale, which should leave with the buyer an impression of courtesy and confidence in the salesman. There is, of course, some difference in the work of the traveling and the inside salesman, but the principles underlying both are the same.

There are numerous other positions in the buying and selling departments, and it is not unusual for boys to start work as cash boys or stock boys, and then to rise to positions as salesmen, heads of stock, credit men, department managers, traffic managers and buyers. Salesmanship is frequently strenuous and trying work. For the traveling man, especially, it has several disadvantages. He is frequently away from home for long periods at a time, and is often subjected to much discomfort while traveling about, especially in rural districts. However, men of ability, whose talents lie in the field of business, find many opportunities in the work of selling, enjoy its competitive aspects and find a certain fascination in their daily work of influencing the minds of the men with whom they come in contact. The salaries in this field vary greatly. There are salespeople who earn $15 a week, and others with an income of $15,000 a year, or more. Financial returns depend upon ability, for most salesmen are paid on a commission basis.

Connected with the buying and selling departments of a business are the offices where the clerical work is done. At the bottom of the ladder of office employment is the office boy. He does all kinds of small tasks which are allotted to him, and if he is a bright, intelligent and diligent fellow, willing to learn and work, he can easily rise to a higher place. Everyone knows some stories of now wealthy and influential business men who began their careers as office boys. Every office boy cannot, of course, attain great things, but he has an excellent opportunity to learn a good deal about the business in which he works, and so to prepare himself for promotion. Office boys earn from $10 to $15 a week.

The next step up is a clerkship. There are clerks who attend to the filing system, clerks who operate calculating machines and mailing machines and clerks who perform various other such duties. A clerk should be neat, accurate, quick and conscientious in his work. If he has a high school education or its equivalent, and is an intelligent worker, he should have no difficulty in rising to a higher position, as, for instance, that of chief clerk. The chief clerk must be thoroughly familiar with all the details of office practice and must be of the executive type—able to see that the work is done and done right. A clerk's work is usually done in pleasant surroundings, is not difficult and generally offers good chances for advancement to the ambitious worker. A beginner may earn from $12 to $18 a week, more experienced clerks earn from $18 to $25 and chief clerks between $25 and $40.

Stenographers and typists are also needed in the work of the office. Many young people start in these positions, working themselves up into appointments as private secretaries, advertising men or salesmen. Stenographers should, of course, be able to take rapid dictation in shorthand, should have a good knowledge of the English language, a good memory and the ability to attend to the details of office work without continuous supervision. Typists should be neat, accurate and quick workers, with the power of concentrating upon their work even in the midst of the noise of a large office. The more a stenographer or typist knows of the details of the office routine, the more efficiently he will be able to do his work. Stenographers and typists receive varying salaries according to their education and ability; they are paid anywhere between $12 and $35 a week, and if they have a knowledge of bookkeeping, or some other important subject, or sufficient executive ability to supervise the work of some other people, they often earn more.

Bookkeepers keep an accurate record of all the transactions of the business or of some one of its special departments. They must have a thorough knowledge of single- and double-entry bookkeeping, their penmanship must be clear and legible and they should have a good memory. The bookkeeper's position may lead to a position as an accountant, if he is willing to study in his spare time. Bookkeepers earn from $25 upward.

The general work of the office is supervised and directed by the office manager. He attends to the employment and discharge of the office help, and sees that their work is thoroughly and efficiently done. He should understand the work not only of his own department but of any others connected with it. He must, of course, be a man of good executive ability, and should be resourceful, diplomatic and energetic. He should be a forward-looking type, with progressive ideas, for the efficiency of the office force depends upon his methods. An office manager's work is well paid, the minimum usually being in the neighborhood of $3,000 a year.

Up to this point the educational preparation necessary for the successful pursuit of the various business occupations has not been mentioned. In all of the higher positions a high school education, at the least, is almost essential. It is exceedingly useful to have gone through high school in any case, however. For the positions as clerks, stenographers, typists and bookkeepers some definite commercial training is also necessary. There are, in every city, commercial high schools offering day and evening courses free of charge, and private business schools in which tuition fees are not very high, and where day or evening classes may be attended.

For positions as office managers, salesmen and buyers, the more education one has the better. Many high schools give courses in merchandising and related matters, but probably the most thorough courses in business practice are to be found in the business schools of the large universities. These courses may either be taken in connection with college studies, or separately, during the day, and in some cases in the evening. The tuition is higher than in a commercial school, amounting to from about $300 to $500 a year for two, three or four years.

Education will be a great help to the boy who enters the business world, but initiative is even more important. Without this he will probably be lost in the swirl of competition for advancement. Initiative, training, ability and hard work will, however, open wide the doors to success. And the man in a business position, who serves well in it, may feel that he is doing an important public service, because of the close interrelation of business with our daily life.

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CHAPTER XVII

CHEMISTRY

The great value of the work of the chemist is just beginning to be properly appreciated in this country. The contributions he is making to the advancement of science and industry are of the greatest importance. Medicine, agriculture, manufacturing and mining are among the sciences and industries which owe to the chemist much of their recent growth and development. Whether the chemist is engaged in a government position or not, he is always rendering public service of a most necessary and productive kind. His work contributes directly to the maintenance of the health and the production of the wealth of the nation. The examination of foods and drugs, the reclamation of exhausted soils, the invention of new production processes and of altogether new products are all included in chemical practice, and are all essential to the continued prosperity of a country.

There are numerous kinds of professional chemists, but they may be roughly classified under a few types. Chemists of the academic type are engaged in teaching chemistry and carrying on chemical research in university laboratories. Government chemists in federal, state or municipal positions do analytical and research work of various kinds. Most people first became aware of the existence of government chemists during the war, when the invention of poison gases, bombs and gas masks were matters of general interest, but much work of a more lasting and constructive nature is annually done by the same chemists who devised new instruments of war. Agriculture has been greatly helped by their work in the chemistry of soils and fertilizers; public health is protected by their analysis of foods and drugs and industry is promoted by their experimental work with various chemical agents.

Perhaps the largest subdivision of the chemical field is that of industrial chemistry. The industrial chemist may either engage in private practice or he may be employed by some large industrial concern. There is plenty of room and opportunity for various types of workers in industrial chemistry. First, might be named the analytical chemist, who analyzes the raw material or finished product of a concern, in order to determine the quality of the former and the possibility of saving in the production of the latter. These chemists save millions of dollars by their investigations. They may, for instance, discover that ore taken from a certain mine contains two different metals, and thus save the promotors of the mining operations from the mistake of discarding as waste what may be a source of large income.

Then there are research chemists in industry. These men work in the laboratory along several lines. They experiment with various materials in an attempt to produce from them new products of commercial value. Thus they help to eliminate waste, for they utilize the waste material resulting from the manufacture of one product in the making of "by-products." The large meat packers, for instance, have various factories which, as a side line, manufacture buttons and combs, chewing gum, gelatin and many other products from the hoofs, horns and other parts of the animal which cannot be used for meat.

The chemical engineers are usually the men who devise the proper mechanical apparatus for carrying out the production processes invented by the research chemist. The field of chemical engineering has wonderful openings for men who combine business ability with scientific knowledge. Not only do they design industrial plants and supervise their erection and equipment, but they frequently rise to positions of control of an entire industry, because of their threefold ability as chemists, engineers and business men.

All chemists, of whatever type they may be, need a good general education, besides a thorough grounding in the principles of chemistry. They should have some knowledge of history and literature, should be acquainted with other sciences as well as chemistry, should have a thorough training in higher mathematics, and as much knowledge of French and German as possible, since a great deal of the most important chemical literature is written in these languages. The university courses are generally considered good preparation for the chemist, for, besides training in the fundamentals of chemistry, they give the student a general cultural background and, in most cases, a knowledge of chemical literature, which later on will prove a great time-saving factor in the solution of practical problems.

Laboratory work is, of course, an important part of the chemistry course in every school, but some schools have made special arrangements whereby chemistry students may go into actual industrial laboratories and there devote themselves to the solution of whatever chemical problems are at the time under consideration. This type of training is of the greatest value to the young man who plans to become an industrial chemist, because it makes him realize the importance of doing his work quickly as well as accurately, and because it gives him a chance, very often, to come in contact with factory conditions and large-scale methods of procedure.

Some men have become industrial chemists without having taken courses in a university or high-grade technical school, but by having served an apprenticeship in an industrial laboratory. Such men, however, usually have not sufficient knowledge of chemistry to be able to attain the highest positions. Of course, university training alone cannot fit a man for an immediate executive position. As lawyers, doctors and other professional men find that on leaving school they had best go in with some older man in order to gain experience, so the chemist finds that he must go through a period of further training under the direction of experienced men before he is sufficiently accustomed to the ways of the industrial laboratory to be able to do original work.

The demand for competent chemists insures that money spent on technical training is well spent. A thoroughly trained man may receive as his initial salary from $100 to $150 a month, and after several years, if he proves himself a capable and original worker, his earnings may be from $5,000 a year up. Some "consulting chemists," acknowledged experts in their fields, have a yearly income of as much as $50,000, but these are, of course, the rare exceptions. Government chemists do not average even $3,000 a year, but they enjoy the advantages peculiar to all government positions.

There are certain necessary qualifications, besides the one of technical knowledge, which the man who is to be a successful chemist should have. He needs, first of all, a scientific type of mind—keenness, good powers of observation and a strong reasoning faculty. Then he needs imagination, originality, self-reliance and initiative. The man without these qualities will never amount to much as a research worker or as a chemical engineer, for both must be able to foresee difficulties and methods of overcoming them, and to go ahead with work on their own responsibility. Intellectual capacity and a love for study are necessary too, not only for a mastery of the fundamentals of chemistry, but for later work in experimentation and research. Business ability will be of great value to the chemist, especially to the industrial chemist who looks forward to an executive position; and absolute honesty and trustworthiness are essential, for, without these, the most capable, energetic, enthusiastic and original chemical worker will be useless to his employers.

The young man with all the qualifications mentioned, with sound training and with a desire to get ahead, will find many advantages in the profession of chemistry. Practically the only disadvantage lies in the fact that the chemist must sometimes work out some important problem in a very limited time, but the trained man will know how to overcome this difficulty. There might be mentioned also the fact that there is an occasional accident in a chemical laboratory, but this occurs very infrequently, and safety devices of all sorts minimize the danger. To counterbalance these slight disadvantages there are numerous good points about the profession. It is, first of all, not a crowded one, and so offers opportunity and scope for advancement to many young men. Then the salaries are good, and the work itself fascinating. But besides the interest which his work affords him, the chemist has the satisfaction of knowing that he is performing tasks of the greatest value to humanity, whether he is preserving the fertility of the soil, guaranteeing pure foods by his analysis, utilizing hitherto waste products in manufacture or doing any other of the useful things connected with his profession.

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CHAPTER XVIII

CIVIL SERVICE

One of the greatest employers in the country, in whose service there are thousands of people comprising all kinds of workers, from unskilled laborers to the most highly trained scientists, is the government. Civil service includes all government service to which candidates are not elected, except service in the army, navy or marines. In the days when the "spoils system" existed, politics was practically the sole factor in the choice of men for, and their removal from, government positions. The man who had been elected to an executive office felt that he owed to the friends who had helped elect him some reward for their efforts. So he ousted from the government service those who were not of his party, and put into their places the men he favored. After the following election, the same thing was repeated, and so it continued for years.

This state of affairs brought about the double result of rendering civil service positions undesirable to their incumbents (since no one could be sure how long he would hold his place), and of rendering the civil service not a true serving of the public, but a graft and politics-ridden proposition. And so progressive groups began to demand reforms in the entire conduct of the civil service, and the "merit system" was finally established.

The merit system is the system of competitive examinations held for all kinds of positions in the civil service. Through these examinations, lists of eligible candidates are obtained and appointments made from among those with the highest ratings. Most federal civil service positions come under the heading of "classified" civil service, or are, in other words, to be entered upon only through the successful passing of competitive examinations. In this way political pull is eliminated, and the public can be assured that only the most competent men are appointed to positions of public service.

State civil service also is practically always based upon the merit system. The cities and towns of the country have been the most backward in adopting this system. Although almost every large city has instituted it, a large number of the smaller towns still permit many of their municipal offices to be filled by the direct appointment of unexamined candidates.

There are as many different types of positions in the federal, state and municipal civil service, as there are kinds of trades and professions. All kinds of workers are needed to increase the comfort and convenience of the daily life of the nation, for that is what civil service workers do. They are the servants of the public, paid by the public, and working for its good. The post-office department of the United States, the various state auditing departments, the municipal police departments are but three of the best known examples of the type of work undertaken by the civil service. There are so many activities in which the government has a part that thousands of positions of the most diverse kinds exist in its service. Laborers, engineers, accountants, doctors, clerks, mechanics, stenographers, architects, chemists, printers, firemen and lighthouse keepers may be mentioned as a few of the various sorts of workers employed by cities, states and the federal government.

The specific duties of the holders of various civil service positions cannot, of course, all be mentioned. There are thousands of such positions and each man must carry out the prescribed duties of the one he fills. Neither can any definite list of qualifications be given, for every office demands different abilities. All candidates for the federal civil service must, however, be citizens of the United States, and in most cases at least twenty-one years of age. Those who desire to do professional or technical work must be able to show their state license, and men who wish to undertake various other kinds of work must have sufficient knowledge, along the definite lines their work will cover, to pass the practical tests which are given in these subjects. In the *Report of the Congressional Joint Commission on Reclassification of Salaries,* published by the Government Printing Office, Washington, in 1920, there is a very complete list of positions in the federal civil service, together with the duties, qualifications and proposed compensation connected with these positions, and lines of promotion which they offer.

Certain innate qualities which are necessary in all government positions, of whatever kind, are loyalty, exactness, quickness and diligence. The quality of patience is also most desirable.

There is much red tape connected with all government operations. Often this will seem quite useless and unnecessary, but it no doubt has some purpose, and the civil service employee must be prepared to follow precedents and to employ methods with which he is in personal disagreement. Here both his loyalty and his patience will be called into play, and he must make use of both.

Perhaps the largest number of federal employees are to be found in the class of clerical workers. There is a steady, and it seems growing, demand for stenographers, typewriters, bookkeepers and clerks. In order to qualify for a clerical appointment, it is necessary for the applicant to take certain "grade examinations," consisting of tests in spelling, penmanship, arithmetic and other elementary subjects and, in addition, special practical examinations which will test his efficiency in the particular branch of work he desires to do. If the candidate is among those who most successfully pass the examinations, he may be given an appointment for a probation period of six months; if at the end of that time his work has proved satisfactory, his appointment is made permanent. The average salaries paid to clerical workers by the government are generally a little higher than those paid men similarly employed by private firms.

The government is employing more and more highly trained technicians and scientists. Graduates of technical and professional schools and of the colleges are being sought for many important positions. These men also are required to undergo examinations which will test their fitness to accomplish the work they want to do. Chemists, statisticians, sociologists, physicians, librarians and engineers are among the types needed to fill various responsible posts requiring specially trained men. The pay which these men receive is often not as great as what they might earn in private life, ranging from about $1,000 to, in some unusual cases, $10,000 a year.

In the state and municipal civil service, there are numerous positions similar to those in the federal service. The state and city have need of all kinds of people from regents' clerks to printers, from agricultural experts to public accountants, and from policemen to tenement-house inspectors. One should have the same general qualifications for state and municipal as for federal civil service—loyalty, honesty, diligence and the ability to pass the preliminary examinations with high grades. In order to be posted on the type of examination the prospective candidate will have to undergo, it is well for him to obtain the most recent *Manual of Examinations* from the U. S. Civil Service Commission at Washington, from the State Civil Service Commission, or from the local Municipal Commission. These manuals give full information as to the requirements which must be met for appointment to a position in the civil service, and contain also examples of past examinations similar to the ones which will again be held. Information as to when and where definite examinations will be held can also be obtained from these commissions.

In order to pass the tests, certain definite preparation is usually required. For people who must take the grade tests, a high school education will be of great help, though not absolutely necessary. Then the candidate must, of course, have had training in the particular branch or subject with which his position will deal. Thus, if he is trying for an appointment as a stenographer, he should have a course in a business or commercial school; if as an engineer, he must be able to prove that he is a technical school graduate, or has had equivalent training. There are some special schools which coach one for the grade examinations. Usually, however, a short course in an evening high school or in a commercial school will help one to master the subjects required. For the more important positions in the civil service, a good general education is necessary and, in addition, some training in the principles of government and along one special line of professional effort.

Salaries of men of the unskilled or semi-skilled laboring class, and of those who receive appointments as clerks and mechanics, have, in the past, been higher than those paid by private employers for similar work. But for the technical or professional man the inducement of high salary is lacking, for, though the government demands a high grade of service, it has till now not rewarded this with an adequate financial return. Men of real scientific worth, doing work of the utmost importance, have seldom received much above $5,000 a year. There is now a movement under way looking towards a readjustment of the scale of salaries, however, and it is to be hoped that the government will realize that it is thoroughly worth while to offer big men some financial inducement to enter its service.

It seems that men of the clerk class have a large number of advantages all along the line. Their work is simple, their hours short, their vacation long and, provided they do reasonably good work, they are sure of retaining their positions till old age or voluntary retirement removes them. Security of tenure is an advantage found in practically every government position nowadays. It is certainly most gratifying to feel that, whether times be good or bad, one's pay and one's position will be certain. This very fact may, however, dull a man's ambition, and the monotonous routine of the work may succeed in obliterating his individuality. This danger may be averted by displaying the same qualities which are likely to stand one in good stead in the business world—initiative and ambition. The civil service worker must, as has been said, yield to certain precedents, but this does not mean that he will necessarily have to become little more than a human machine. There are plenty of chances for advancement, and the man who does his work in the proper spirit usually does get ahead.

In the higher positions, where professional, technical and scientific men are employed, there is ample opportunity for work of a more individual and original nature, and for the expression of one's own personality through one's work. Many men enter the civil service with no idea of staying in it. Numerous young men, anxious to prepare themselves for one of the professions, accept appointments as clerks, studying after hours and during vacations, and, when they have completed their education, resign from the government service in order to practice their professions. Others, young scientists or technicians enter the civil service for a short time to obtain experience in their chosen field. But the men who do remain in the service of the government may feel that they are doing work of the most useful kind—for they directly serve the people of the nation and, if their work is well done, materially add to the prosperity and happiness of their fellow-men.

There are so many kinds of service of which the public has need that it should not be difficult for any young man contemplating the civil service as a career to select some one kind of work which will be congenial to him and, with the highest post in this line as his goal, to work himself up to a good position, in which he will find personal satisfaction, and which will give him, as a government employee, a certain dignity and standing in his community.

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CHAPTER XIX

DENTISTRY

Not so many years ago the dentist was considered of rather minor importance as compared with the medical man. People did not go to him unless it was necessary to have a tooth extracted or an exceedingly evident cavity filled. But within recent years dentistry has grown continually in importance, and has become a profession of increasing dignity. The close connection existing between the work of the physician and that of the dentist is at last coming to be understood by everyone. People know that the dentist can do as much in his way to help them preserve their health or cure their ills as can the doctor. They know that if they take proper care of their teeth they may avoid many ills, and they realize that only periodic visits to the dentist will enable them to keep their teeth in a truly healthy condition. So the dentist renders a great service to mankind not only by the actual operations which he performs, but also by the large contributions he makes to the education of the public along the lines of proper preservation and care of the teeth.

The dentist is a sort of combination of the professional man and mechanic. He must have scientific knowledge and training, and also a considerable amount of mechanical skill. His work consists of examination of the mouth and teeth, and then mechanical work or surgical operation to remedy whatever defects he has discovered. Usually both surgical and mechanical work are necessary to complete the operation. Of course, not every dentist performs all the various kinds of work involved in his profession. There are men who specialize in oral surgery, others who confine themselves to the extraction of teeth and still others who specialize in the treatment of mouth diseases. Numerous dentists, however, practice "regular" dentistry, consisting of extraction, filling, cleaning, replacing and general care of the teeth.

The natural qualifications of which the dentist should be possessed are in many ways similar to those of the doctor of medicine. A pleasing and confidence-inspiring personality is essential. Now, especially, when the seriousness and the importance of the dentist's work are gaining added appreciation, it becomes increasingly evident that a good personality is an asset. Under the heading of personality may be placed one of the most important qualifications of the dental practitioner. The most thoroughgoing neatness and cleanliness are absolutely essential if he wishes to gain and retain the confidence of his patients. The man who is not himself immaculate, and whose office and instruments are not in a state of antiseptic cleanliness, can expect people to have as little confidence in him as they would in a doctor similarly deficient.

The prospective dentist should be of a studious nature, for in the study and later practice of his profession he will find it advisable to master much material of a kind which, even a few years ago, it was not considered necessary for the dentist to study. A larger amount of medical knowledge is becoming steadily more important for the dentist. The effects of the condition of the teeth upon the general health of the body, and the close interrelation between the work done nowadays by doctor and dentist, require, on the part of the latter, an increasingly broad knowledge of medical principles. Even after the dentist has established his own practice, it will be necessary for him still to continue studying—for new developments in the science of dentistry are not uncommon, and he must keep up with all of them.

The dentist must also be the type of man who can work well with his hands. Manual skill is an absolute requisite in whatever field of dentistry he may specialize. Examination, extraction and filling of teeth all require it, as do simple or more complicated oral operations.

The work of the dentist requires very definite preparation. In many cases not more than a high school education is required of students who are about to enter a dental school. But there is a growing tendency on the part of the best schools to demand that entering students shall have completed at least two years of college work. If dentistry is to be ranked on an equal plane with the other professions, it would seem that as broad an education as possible, in addition to dental training, will be a decided advantage. With the courses in dentistry, it is now quite common to combine several courses in the principles of medicine, for reasons which have already been mentioned. Those men who wish to become specialists in oral surgery, the treatment of mouth diseases or other similar branches must first have a thorough and comprehensive knowledge of the general field of dentistry. Once this has been attained, they can pursue additional studies in their chosen field of specialization.

The cost of a dental education may vary from about $300 to over $3,000, depending on the school selected and the length of the course taken. Definite information as to courses offered by the various schools may be obtained from them upon application. Dentists are required to pass examinations given by the State Board of Examiners before they are licensed to practice their profession.

When the young dentist has finished his studies and obtained his license, he faces the same problem as does the physician in similar circumstances. The problem is—How shall he set to work to build up a practice? The equipment of a dental office is a rather expensive matter—the furnishings and instruments which are necessary costing usually several thousand dollars. Many young men cannot, at the beginning of their careers, afford such an outlay, so they frequently enter the employ of another dentist as his assistant. In such a position, the young dentist may earn from $40 to $50 a week, and be gaining very valuable experience. When he has saved up sufficient money for the proper equipment of an office, he can practice his profession independently. As a general practitioner, he may, during the first few years of his practice, find that his income is not very large, but after four or five years he will probably be making anywhere between $5,000 to $10,000 a year.

The dentist's income depends on several factors. First and foremost comes the quality of his work; but his personality, his business sense and the neighborhood in which he pursues his practice will have much to do with it. A specialist along one line may earn from $10,000 a year upward, for people are willing to pay well for sound dental advice and treatment.

Besides the doctors of dentistry above mentioned, there is the man known as the "mechanical dentist." He is not really a dentist at all, for he is not in actual contact with patients, but a skilled mechanic who makes in his laboratory the artificial materials (such as crowns, bridges and plates) needed by the dental practitioner. The dental radiographer, who takes and develops x-ray pictures of the mouth and teeth, is also an important aid of the doctor of dentistry.

The mechanical dentist need not be of so studious a nature as the doctor of dentistry, for his work requires chiefly manual skill. Of course, he should be intelligent, but the matters he will have to master will not require a long period of study. He, too, should be a neat, careful and accurate worker, with perseverance and diligence.

It is desirable that the mechanical dentist have the equivalent of a high school education, during the course of which special stress should be laid on chemistry, physics and manual training. Then he must have practical training in the making of crowns, bridges, inlays, artificial teeth, and in the proper use of metals and other materials for this work.

The mechanical dentist usually begins his career in the employ of some dentist whose practice is so large that he has need of such an assistant. Here the dental mechanic may earn anywhere from $15 to $50 a week, according to his skill. But there are larger opportunities for him too. He may establish his own laboratory and obtain orders for work from a number of dentists at a time; and if he has business ability, and does work of good quality, his earnings may amount to from about $3,000 to $8,000 a year, or more. The mechanical dentist's work is light and pleasant, and sufficiently varied to be interesting, and it is work which offers large opportunities, for, as the number of dentists in the country grows, the need for mechanical assistants is bound to increase also.

Dentistry is a profession of many advantages. The financial outlay connected with the equipment of an office, and the uncertain earnings during the period when the young dentist is beginning to build up his practice, are perhaps the chief disadvantages to be encountered in this profession. Of course, there is a certain amount of unpleasantness in the contact with diseased teeth and mouths, but all doctors must face similar conditions in their humanitarian work. Dentistry is not easy work either, but the advantages far outweigh its disadvantages. It is a growing profession, in which there is plenty of room for ambitious young men—for the number of dentists in the country is small when compared with the population. Then, it is a well-paying profession, and one that is looked upon with much respect. And finally, it is a profession which does much to alleviate human suffering, and makes large and lasting contributions to the welfare of humanity.

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CHAPTER XX

DRAFTING

The architect who designs a building and the engineer who plans a difficult structure or devises a new machine do not themselves carry out the designs. This is left to competent workmen under their supervision. But how do these workmen know how the machine is to be constructed, or the house built? How can they tell what materials are to be used for the various parts, what size and shape these parts are to be, how they shall be related to each other—how, in fact, the plans are to be worked out? If the workmen were to rely only upon spoken or written directions, it is quite certain that they would not accomplish very much, for such directions would have to be so minute and copious that they would easily be subject to misinterpretation. The most accurate, the most simple, the most easily and universally understood manner of conveying the architect's or engineer's ideas to the constructor is through the medium of drawings.

These drawings are not pictorial ones—which might represent very fine-looking objects, but which would hardly give the workman an idea of how to proceed in order to reproduce these objects—but what are known as working drawings. A working drawing is a clear, detailed, complete and accurate presentation of the object to be constructed, of its parts, of their dimensions and the materials to be used in making them and of the relationship of the parts to each other and to the structure as a whole.

It is the work of the draftsman to make these drawings. He occupies a very important position in industry, for he stands as an interpreter between the creative mind of the man who plans and the skilful hands of the man who constructs. In other words, he renders the ideas of the designer of houses, machines or other objects intelligible to the workman who is to carry out these ideas. Very often the draftsman is given only a very rough and incomplete sketch of the object which is to be constructed. This sketch is frequently more of a suggestion than anything else. It is his duty to turn the suggestion into a drawing which will give so clear and detailed a plan of the object that its absolutely correct interpretation will be assured. Some draftsmen merely prepare a finished plan from a rather complete general plan furnished by the designer, while to others is left the business of developing small parts and of working out details of construction.

Although the general purpose of the work of all draftsmen is the same, the field of draftsmanship may be greatly subdivided. But there are certain fundamental qualifications which draftsmen of every type should have. Of great importance are neatness and absolute precision in carrying out the work. The slightest deviation from the correct line, or the least messiness in the drawing, is likely to cause mistakes in construction. Excellent eyesight is another thing which the draftsman must have. His work makes great demands upon his eyes, and should not be undertaken if he has any serious optical defect. A certain amount of manual skill also is necessary for the proper handling of the draftsman's instruments. Of course, every draftsman must have a talent for drawing, be thoroughly familiar with the principles of drafting, should have a liking for, and a good knowledge of, mathematics; he should know as much as possible about applied mechanics, engine practice and physics, and about the strength and other qualities of the various materials used in construction. This knowledge is all necessary if the draftsman is to be more than a mere copyist of drawings. If he wishes to be entrusted with the actual working up of the designer's suggestions, he must have the technical equipment with which to do so.

Besides conforming to these general requirements, draftsmen must have the special qualifications necessary in their particular subdivision of the profession. The architectural draftsman should have some artistic feeling, should be able to plan and work out the architectural details of buildings, to make general building designs and to draw free-hand sketches of the proposed structures. He must have a knowledge of architecture, a practical understanding of construction materials and also the ability to compute the quantity and cost of materials required for carrying out the plans made.

The mechanical draftsman, who makes drawings and layouts of machines and tools, must know something of the principles of mechanics, be familiar with machines of many types and should be a good mathematician. Marine, mine, structural and railroad shop draftsmen are all closely connected with engineers in these branches, and should have as much specific knowledge as possible of the details of construction along these lines. The topographical draftsman makes maps and assists in topographic surveys of the coasts and inland territory. He employs numerous signs and symbols, and requires skill in free-hand drawing. The commercial draftsman should be skilled in general drafting, which involves the drafting of charts, statistical forms and records; the laying out of building locations; and the planning of the arrangement and utilization of space for rooms, offices and factories. The patent draftsman, usually employed by patent attorneys, is called upon to make drawings of the most varied sorts of mechanical devices, and his chief requisites are a certain amount of versatility, and the ability to do extremely clear and accurate work. Mechanical drawing furnishes the foundation for all of the above specialized occupations.

Even the most elementary work of the draftsman, that of tracing or copying drawings, requires some training on the part of the young man who wishes to enter upon it. To do even the simplest drafting, it is necessary to know the uses of the various instruments with which one is to work. This training can very often be obtained in the mechanical drawing classes of a public day or evening high school, or in a public trade school. Very often young boys who have had some school courses in mechanical drawing, are engaged as tracers or letterers. The principal requirements for such positions are neatness, accuracy, familiarity with the use of the draftsman's instruments and the ability to do neat and rapid lettering. Therefore, boys with no more preparation than high school courses in mechanical drawing can easily fill them. In order to advance to a position as a real draftsman, however, further training is usually necessary. Boys employed in minor capacities in a drafting room have sometimes managed, through actual contact with the work of the more experienced men, to gain sufficient knowledge to advance to a higher position.

In general, it is wisest to take a good course which will give one something more than merely the principles of mechanical or architectural drawing. The technical knowledge which stands the draftsman in such good stead, making him a specialist in some one field, can usually be obtained at a college or technical school. Many young men, graduate engineers or architects, are glad to accept for a while positions as draftsmen; in this way they gain experience and are enabled to profit by the practical knowledge of the men who employ them. It is best for the prospective draftsman to have at least a high school education, and any further schooling will be of great advantage.

The cost of training for draftsmanship varies from none at all, to several thousand dollars. One may take free courses in public high schools and trade schools, may study at a college or technical school which charges low tuition rates or may take a complete architectural or engineering course, which will usually cost, at the very least, $300 a year, for a period of three, four or five years. A list of public high and trade schools giving instruction in mechanical drawing may be obtained from your local Board of Education, and detailed information as to courses offered by other institutions may be obtained from them upon application.

The man of truly constructive type of mind may not be satisfied to remain a draftsman, for draftsmanship is not, after all, creative work; but it offers excellent training and a fine approach to the architectural or one of the engineering professions, especially on the designing end. The fact that it involves more or less steady plodding at the same type of work, and that it is apt to be hard on the eyes, constitutes its chief disadvantages as an occupation. Of course, the more technical knowledge one has, and the higher a position one attains, the more scope will one have for exercising his own creative talents.

The beginning draftsman, tracer or detailer may earn from $15 to $20 a week, but more experienced draftsmen can make from about $35 a week to $5,000 a year, according to their experience, knowledge and ability.

When one thinks how far trade and industry depend upon the construction of machinery of so many kinds, and upon the erection of buildings of all sorts, the significance of the draftsman's work becomes apparent. His function is, in its way, as important as that of the man who actually plans new structures, for without him it would probably be impossible to undertake large-scale construction.

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CHAPTER XXI

THE ELECTRICIAN

This has often been called the age of electricity, and the many wonderful developments along the lines of electrical invention fully justify the name. Edison, Steinmetz and men of equal genius have brought electricity so far under human control that it is utilized in a thousand different ways. Electricity lights and heats buildings; supplies the power necessary to run huge machines, street cars and small household devices; enables us to speak to people at a distance by means of the telephone, to mount to the top of a skyscraper in a few moments by means of the electrically propelled elevator and to do hundreds of other things in ways which, even forty years ago, were practically unknown.

Electricity has for most people a great fascination. It is a force, of the nature of which practically nothing is known—even the greatest man in the field cannot offer a satisfactory definition of electricity. And it is, besides, a force which, though so far conquered by man, has still unlimited possibilities of commercial exploitation. Its further utilization and adaptation to our needs will probably extend over a period of many generations to come. And so it offers a large and interesting field of work for many different types of men.

Electrical devices are invented and improved upon by the electrical engineer. But these devices must be properly installed where needed, and repaired when necessary, and this work, not of an inventive nature, but nevertheless exceedingly necessary, is undertaken by the practical electrician. Thousands of electrical workers are employed by such public service corporations as the large electric light, heat and power companies, the electric railway and the telephone companies. Thousands of others are independent journeymen contractors, or are employed by some comparatively small firms.

The work of wiring buildings for light and power, and for the installation of various signaling devices, is one of the most important duties of the electrician. Signal wiring for door bells and alarms is generally not very difficult work, especially if undertaken while the building is under construction. Wiring for heat and power requires more skill on the part of the workman. In this work, he deals with wires of high voltage, and their improper installation may result in short-circuiting and consequent fire. The fact that there is such danger in improper wiring has led to the formulation of what is known as the "National Electrical Code." This code prescribes the proper methods of installing wiring, and is in force in practically every community.

The wiring of finished buildings offers the electrician a number of problems. He must exercise a certain amount of ingenuity in planning the routes of the conductors throughout the buildings, so that the flooring and walls will not have to be disturbed more than is absolutely necessary.

Before electricity can be made available in buildings, it must, however, in some way be conveyed from the power house to the house wires. This is done by means of "lines," either overhead or underground, which bring the electrical energy from the generating station to the consumer. The work of "building" these lines, like that of wiring a house, requires on the part of the workman a knowledge of electricity, mechanical skill and great carefulness.

The power house, in which electricity is converted into usable form, is in charge of a "station operator." His chief duty is the operation of the switchboard, from which the many machines which constitute the equipment of the station are controlled. Such a switchboard is usually of very elaborate construction, for it affords connection and interconnection not only with the apparatus in the plant but also with the outgoing lines supplying electrical current to consumers. The operator must know the switchboard perfectly, and must also be thoroughly familiar with the use and operation of the machines in the plant.

Very often electric wires or machines require repair. For the work of locating trouble, large public service corporations employ "trouble shooters." These men must be able quickly to determine what is causing the trouble, and then either make or specify the necessary repairs. Independent electricians usually combine with their work of wiring buildings and installing electrical devices the repairing of faults in wiring and machines.

In order to become a good electrician, one should be interested in electricity, and have a liking for mechanical work. One should by nature be careful and reliable, and accurate in all the work one does. Electricity is a force which allows of no indecision or carelessness. The electrician must know what to do and how to do it properly, and must always exercise the greatest care in his work, for otherwise the element of danger to himself and to others will be ever present. Bodily strength and endurance are necessary for the man who does work in buildings under construction, where he is exposed to the weather; and the lineman, too, must be robust and of a strong constitution.

If the electrician wishes to become an independent contractor, he must combine with the above qualifications sound business sense. Many excellent electricians who start in business for themselves fail to succeed because they have not a sufficient amount of business ability to keep a set of books or know how to sell their services to the best advantage.

Every electrical worker should know something of the theory of electricity, and should have as much general practical knowledge of electricity as possible. In his own special field, he should be especially well informed. A good knowledge of mathematics, chemistry, physics and mechanical drawing will be of great use to him. Instruction in these subjects may be obtained in the public high schools or evening high schools. There are numerous institutions in which one can acquire a good general and technical education combined. There are, in every city, public high and trade schools, where free instruction is given. Many large corporations maintain schools where employees are given thorough technical training. Many of the large universities, especially state universities, offer electrical courses in their engineering and extension departments, through which the electrician who is of an inventive nature, and who is willing to devote his spare time to study, can in time qualify as an electrical engineer. In very many cases the electrician can obtain his training free of charge and, if he should be obliged to pay tuition fees, they would not, as a rule, be high.

Practical experience in electrical work is just as essential as theoretical knowledge. Some young men are employed as "helpers" to electricians. For such a position, practically no technical knowledge is required. While he is a helper, the young man can learn much through actual experience, and can, by studying in the evening, soon advance to a more advanced position. The local Board of Education will be glad to furnish a list of public high and trade schools which offer courses in electricity; and other schools will give applicants full information as to the courses they offer.

The demand for well-trained, thoroughly efficient electricians is a steady one. The electrical industry is so large, and continues to grow so rapidly, that it offers splendid chances for secure employment in interesting work, at good wages. The element of danger in electrical work can be rendered practically non-existent if the electrician is sufficiently careful in going about his tasks. The earnings of electricians vary according to the type of work they do. Helpers may earn between $12 and $25 a week. Linemen and wiremen earn between $75 and $175 a month, trouble shooters to about $175, and chief electricians in power houses to $300 or more. The independent journeyman contractor's earnings are determined by the neighborhood in which he works, by the quality of his work and by his business ability.

The electrician's work is altogether very satisfactory, since it is steady, offers some variety, good financial returns and numerous opportunities for advancement. It is a very necessary work, contributing directly to the comfort and welfare of the public.

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CHAPTER XXII

EMPLOYMENT MANAGEMENT

The ultimate success of any business is to a great extent dependent upon its employees. Upon their proper selection and consequent performance and satisfaction is based the producing power of that business, whether goods or service is the particular product with which it deals. And as the success of the individual business is determined by its employees, so, too, is industry as a whole affected by those who carry out its processes. If labor so greatly influences business, it is necessary that the question of the selection of men and of their treatment during the period of employment be considered scientifically. By "scientifically" is not meant "cold-bloodedly," as some people imagine. On the contrary, employment management is a most humanizing factor in industry. But it is scientific, because it is based on accurate research and deduction, and does not permit itself to be influenced by irrelevant considerations.

Employment management is one of the newest professions. The business man used to employ rather indifferent and inefficient methods in securing his employees, and, once they were secured, he made no special efforts to increase their usefulness to themselves and to the business. Modern employment management is concerned with the selection of the right man for the right job, with his education into greater usefulness, with interesting him in his work and giving him a feeling of satisfaction in his employment. Where there is satisfaction of the employee, there is greater stability of labor. A large "labor turnover"—which means a shifting of employees, due to the leaving of some, and the employment of new men which this necessitates—is a source of great expense in business. By reducing the labor turnover, and increasing the efficiency and happiness of employees, employment management renders service to the employer and workman alike.

The fact that employment management consists not only of the selection of workers, but also of their development, means that it is an exceedingly broad field, in which several different types of executive are needed. Some of the problems with which the personnel or employment department of any business must deal are those of analyzing jobs, placing men in the proper places, promoting employees, determining wages and carrying on welfare and educational work. It can readily be seen that no one man could, in a business of any size, undertake the supervision of all the activities connected with employment management, so in many cases the work of the personnel department is carried on by several divisions, as the employment, educational, medical, welfare and research divisions. Each of these divisions may be headed by a director who is an expert in his special field, and who, while concerned chiefly with the duties of his own position, yet coordinates his work with that of the other divisions.

The employment director attends to the hiring of men, to their placing in the proper positions, to their transfer, promotion, discipline, compensation and discharge. For this work he must have a good working knowledge of the processes of the business, and of the jobs for which he is to select men. In choosing employees, he will avail himself of the new methods of testing the fitness and adaptability of applicants, by means of application blanks, mental tests, trade tests, physical examination and personal interview; and in promoting and discharging he will make use of records of the employee's ability and service. It is the duty of the employment director to know also how and where to reach out for labor, and so he must be familiar with economic conditions, and with the state of the labor market. For his work he must, of course, have a keen mind, excellent powers of analysis, tact, a knowledge of human nature and a fully developed sense of justice. As his work includes the promoting and discharging of employees, these duties, especially, will necessitate a sense of fairness on his part.

The educational director has charge of the training department of the business. Nowadays industry is so specialized that it is in many cases necessary to train workers for their jobs after they have already been hired. The educational director makes accurate job analyses, and then devises courses of study to fit workers for these positions. For his work he needs not only a broad knowledge of industry and commerce, but also of the principles of pedagogy.

The welfare division sees to it that employees are physically cared for, that their opportunities for recreation, their housing and general living conditions are good—in fact, that all the conditions of their social life are conducive to their wellbeing. The research department is investigative and advisory in character. In this department jobs are analyzed; improvements in personnel methods suggested; causes of fatigue, absence and other similar conditions ascertained; and work helpful to all the other divisions of the employment department undertaken.

It will be seen that the director of each of these divisions must be technically expert in his own field, but certain common qualifications are essential for successful effort in any one of the departments mentioned. The man who undertakes any sort of employment management work must be big and broad in his sympathies, with a knowledge of human nature in general, and with sufficient analytic and deductive ability to get at the thoughts, emotions, ambitions and desires of the individuals with whom he deals; for if he can acquire a knowledge of the men with whom and for whom he works, he will be able materially to increase their efficiency and their happiness. He must, in order to be successful in his work, be tactful, of pleasing personality, enthusiastic, energetic and a "good mixer." In order to get to know his men, he must be able to meet them on their own level, be a good listener and an intuitive one. Justness and common sense are also exceedingly necessary qualities in dealing with men, and the employment manager should have a full measure of both.

As he needs a large number of natural qualifications for successful work, so, too, the man in this field must have a large store of knowledge. In whatever particular subdivision he works, he must have a thorough knowledge of economics, be familiar with all phases of the labor movement and must keep in active touch with the industrial, economic and social conditions of the day. He needs, too, some knowledge of psychology, should be familiar with the processes of the business for which he works, and must have a comprehensive knowledge of the newest methods of personnel administration.

It is very desirable that the personnel worker have a college education, and in some cases, as, for instance, in the educational and research departments, this is absolutely essential. In college, he may be expected to gain a broad, general knowledge on which later to found his more specialized studies for the work of employment management. The profession is so new that, until now, many employment managers were drawn from executive positions of various sorts, where they had shown ability in handling men. Recently, however, the scientific development of the field of employment management has led to the establishment in a number of universities of courses which are specially intended to train men for work in this field. These are usually given in connection with courses in commerce or Business Administration.

The young man who has taken such courses must not expect to emerge from them a full-fledged employment manager. Actual experience in industry and in dealing with men must first be acquired. This the young man may obtain by accepting a subordinate position in whatever business he wishes to associate himself with, and by working himself up from that position. Some college students work during the summer vacation, and other men take evening extension courses in a university, while holding a position. In both these ways theoretical and practical training may be combined.

The cost of a college education and of supplementary and more specialized courses in employment management may vary from none at all to several thousand dollars. There are numerous state colleges and universities where a broad education may be obtained free of charge, and there are, of course, other schools where tuition fees are rather high. More specific information may be obtained by application to the institutions themselves.

The employment manager's work will offer him satisfaction in many ways. First of all, it is highly paid work, for its great importance has impressed itself upon industry. Then it is work which offers opportunity for the exercise of a high order of executive ability, and which deals with many fascinating problems in business and human relations. It is difficult and exacting work, but at the same time varied and interesting. The employment manager will find many a chance for real service, for not only does he carry out all the functions of his position but very often he succeeds in acting as an understanding mediator between employer and employees, for he, more so than any other man, has an intimate knowledge of conditions as they affect these two classes.

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CHAPTER XXIII

ENGINEERING

Engineering is concerned with a very broad and varied field of activity. Engineers may be classified under numerous types, but one thing common to all engineering is the great public service it renders. The material prosperity and the physical health and well-being of a country are in great measure due to its development by engineering processes. It is the engineer who makes possible vast interlacing systems of railroads, water supplies brought to large cities from far-distant sources, electric lighting for great communities, the extraction from the soil of minerals in huge quantities. It is due to the science of the engineer that our cities are clean and sanitary, that automobiles and aeroplanes, steamships and locomotives become steadily more perfect, and that roads, bridges, canals and railroads, connecting us with the rest of the world, enable us to live in far greater comfort than did our forefathers.

The immense field of engineering has been divided and subdivided into almost one hundred classifications, but the most important divisions are probably those of civil, mechanical, electrical, chemical and mining engineering. Each of these fields lends itself to further subdivision according to special work which might be done in it.

Civil engineering deals chiefly with the problems of design and the construction of such works as railways, waterways, highways, harbors and municipal works for the control of water supply, irrigation systems and sanitation. The work of the civil engineer is most often concerned with overcoming or adapting natural forces to the needs of man. Without the civil engineer, present-day civilization would soon collapse, for he builds roads over formerly inaccessible places, spans rivers with bridges, connects us, by railroads, with distant regions, dams great bodies of water to prevent floods, tunnels through mountains and constructs systems which bring to cities their necessary water supply. His work consists of the designing of these various works, and of supervising the carrying out of the plans, so that the completed structures shall be entirely safe, and constructed as economically as possible.

Closely connected with, and, in fact, often considered part of, the work of the civil engineer is that of the sanitary or municipal engineer. Public health in town and city depends largely upon the sanitary engineer, who devises methods of keeping the city clean. He undertakes the construction of proper systems of sewerage and drainage, of street-cleaning facilities and of an adequate and sanitary water supply. His work is recognized as of great importance, and very often an experienced sanitary engineer is a member of or an adviser to the public Board of Health.

The mechanical engineer is a designer, constructor and inventor of machinery. He may be engaged in any kind of work from the design of tools to the construction of huge steam or hydraulic plants. Much of the work of the mechanical engineer is experimentation to improve upon former inventions. He is constantly making minor changes in mechanical appliances, and each such change renders the machine a little more efficient and economical. Some of the most important work of mechanical engineers is being done in the field of transportation facilities. Motors of various types, for automobiles, aeroplanes, steamships and locomotives, are being constantly worked upon and improved. The machinery of manufacture also is from day to day undergoing changes at the hands of mechanical engineers.

The field of electrical engineering is an immense and practically unexplored one. In spite of all the new uses to which electrical energy has, in the past twenty-five years, been put, we know that electrical engineering is as yet a comparatively undeveloped factor in modern industry. Many electrical engineers engage in the design and manufacture of electrical apparatus, and others devote themselves to installing and utilizing this apparatus in lighting, heating and power plants, and in the fields of telegraphy and telephony. Other men devote themselves principally to research work in the laboratory, studying the physics of electricity in an effort to further its usefulness to man.

The chemical engineer is daily coming into greater prominence, for at present there are more synthetic products in use than ever before. It is through his work in the laboratory that these products are made possible. Besides discovering new synthetic processes, it is his work, also, to design the proper machinery for carrying these processes to completion. For in manufacturing synthetic products of any kind, it is necessary to have special apparatus, composed of materials which will not be affected by the chemicals used. The chemical engineer is the man who has sufficient knowledge of both chemistry and engineering to design and construct such apparatus, and to install it in suitable plants.

The mining engineer makes possible the utilization of the mineral resources of a country. His work deals with the scientific and technical problems of mining—the testing of the soil for mineral deposits, the opening of mines and their proper equipment, and, finally, the supervision of actual mining operations. Closely related to the mining engineer is the metallurgical engineer, whose work, however, often lies chiefly in the laboratory. For not only does he extract metals from their ores, but he combines them in such ways as to produce alloys which will serve certain special purposes. He is, therefore, a sort of combination of geologist, mineralogist, chemist and engineer.

There are still a few other types of engineer which should be mentioned. The first of these is the military engineer, who, unfortunately, is still in demand. His work is much like that of the civil engineer; he builds tunnels and bridges, embankments and fortifications, and attends to the transportation of supplies for troops which are constantly on the march, or far from supply bases. His work differs from that of the civil engineer chiefly in that it is of only temporary duration and value, and that it must be done, usually, in very little time and with very scant materials and limited facilities.

The industrial engineer is a product of the present time—the time of a scientific conducting of business. The industrial engineer's work is that of supervising some industry in such a way as to bring about, by scientific control of production processes, the most economical production possible. He needs technical knowledge in order to be able to do the necessary work for improving the mechanical processes of manufacture; and he needs business knowledge, in order to deal with the large business problems with which he is constantly confronted.

Surveying is a branch of civil engineering, and is frequently used as a stepping stone to that profession. The surveyor makes surveys or takes measurements of farms, roads, rivers, etc., and for railroads, dams and other engineering projects. He must have good mathematical and drafting ability and should like the outdoors. While his education need not be as thorough as that of the engineer, the surveyor who looks ahead to engineering as a profession will do well to get as broad an education as he can. Assisting the surveyor is the rodman, who carries the rod and cooperates directly with the surveyor or instrument man. He, too, can make use of a knowledge of mathematics and drafting. Another member of the surveying party is the chainman, whose work is largely that of an ordinary laborer. He clears the line of sight, carries the chain and does such other work as may be assigned to him.

Many boys think that, if they like to play with machinery, they have the necessary qualifications of an engineer. But there are a great many qualifications much more necessary than this. The first thing the engineer should have is imagination. Without imagination, there could be no invention. The engineer must be able to visualize a thing before it exists. He must be able to see, with his mind's eye, each completed stage of whatever he is designing or constructing, long before that stage has been reached. The engineer has need also of a capacity for sound judgment, for in work such as he does, which affects so many people, and costs so much in money and in effort, poor judgment may result in great loss, and perhaps in disaster. He must be able to think with scientific precision, basing his conclusions upon definite information. There is no room in engineering for vague generalities or guesswork.

Very important also is a strong creative instinct. The engineer must be a man who loves to work things out, to plan and develop new and original ideas. With this should go ingenuity, the power to make the most out of little, and to adapt oneself to all circumstances. The engineer should be resourceful and a quick thinker. He should have the ability to handle men. He will come in contact with all sorts of men and he must understand how to treat them in order to get the best results. The young man who wishes to study engineering should be fond of, and proficient in, mathematics and science, for engineering is built largely upon higher mathematics and physics, for a mastery of which the student should be of an analytic turn of mind. Good health and strength are also desirable, and in some phases of engineering absolutely essential.

Besides these qualities, the young man who wishes to become an engineer needs a thorough technical training. Some college work is usually considered desirable, for the engineer, as a professional man, needs a sufficiently good cultural equipment to be able to meet, on their own ground, the other professional men with whom he comes in contact.

The advantages of engineering as a profession are many. It can be very broadening, for the engineer comes in contact with all kinds of men, and with all sorts of businesses and professions, and in this way gains much experience of every kind. For the man of restless nature, and, of courage, it offers opportunity for travel and pioneer work in foreign lands, and for the adventure which is sure to accompany such work. For some men this may be a disadvantage, for it means long and frequent absences from home and family. In engineering, there is, for the man of creative mind, a wonderful chance for original work, for discovery and invention. And the fact that it is a constantly growing profession, bound to continue its growth as long as mankind and human needs increase, makes it a very attractive field of endeavor.

The element of danger is present in many phases of engineering work, particularly in outdoor work, in mining and in unhealthy and unexplored regions. The laboratory is not free from accident, and the young man who contemplates making engineering his life work should take these facts into consideration. Every year, however, as safety devices become perfected to a greater degree, physical danger in engineering work becomes steadily less. Another disadvantage—that of rather low pay in proportion to the importance of the work done—is also being remedied, as people are growing to appreciate more and more the work the engineer does, and its widespread influence. The beginner receives but a low salary, and even after several years' experience many engineers have an income of less than $3,000 a year. Large corporations, however, frequently pay high salaries to the engineers they employ; well-known men who work independently as "consulting engineers" often command their own price; and men who combine extraordinary engineering and organization ability have been known to receive enormous sums for their services.

The engineer, however, like every professional worthy of the name, finds his greatest reward in the knowledge that his well-done work is of great value to his fellow-men, and that he is making a substantial contribution to the progress of his generation.

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CHAPTER XXIV

FORESTRY

Three hundred years ago the vast extent of the United States was covered, in most regions, with a dense forest growth. With the coming of the first white settlers began that cutting down of the virgin forests which has by now almost entirely depleted them. It seemed that there was so much forest land that it could never be exhausted, and reckless cutting, which wasted much fine timber, was generally practiced. And then, perhaps twenty or thirty years ago, the results of this wastefulness began to make themselves so apparent that people began to see that, if the forests continued to be used as they had been till then, there would soon be none left. And with no forests, or scant second-growth forests, the country would soon find itself in a serious position, for forests are one of the most important natural resources a land can have.

Perhaps, on first thought, it will seem that forests can have but one use—that of supplying wood for use chiefly as building material and fuel. But they have numerous other and equally important uses. Have you ever thought of what would happen if the spring rains or melting snows were to flow, unimpeded, down the hillsides? The forests act as a natural check for the run-off of these rains and snows, thus protecting the land from frequent and dangerous floods. The forests of a region also have a perceptible effect upon its climate, breaking the force of harsh winds and increasing the rainfall of otherwise dry areas to a considerable degree. Without forests, many parts of the country would suffer from aridity, for vegetation and rainfall increase and decrease, each in proportion to the other.

The many reasons for which forests are so necessary for our welfare so impressed themselves upon the government that it was decided that steps must be taken to prevent the further wasting of the timberlands. Large tracts of virgin forests in the West were therefore brought under the federal jurisdiction as "National Forest Reserves." It is the work of the Federal Forest Service to conserve the productivity of these lands, while at the same time permitting the removal of certain amounts of mature timber. Foresters are engaged for similar work by states and private individuals, and it is through their labor that the virgin forests still left are being preserved for future generations.

The work undertaken by foresters is the proper management of forests on both the productive and business ends. The problems connected with the production of forests are of a scientific type; those connected with their utilization demand business treatment. Thus foresters must, like so many professionals, have the combined abilities of the technical man or scientist, and the business man. The technical side of their work consists of the study and investigation of the forests under their supervision; of the working out of problems dealing with the rate and amount and probable period of growth of the forests; in fact, of the discovery of the best ways to maintain the life and productiveness of forests. The business side of the foresters' work is concerned with the problems of utilization of the timber. Foresters must decide what timber is marketable, must devise cheap and efficient methods of lumbering it and must be able to organize a thoroughly workable system of administration. One other general duty of the forester, which can hardly be put under the heading of either scientific or business practice, is the work of educating the public to a proper appreciation of the value of the country's forests, and, consequently, to a realization of the importance of the work of the professional forester.

In order to do their work properly, foresters must be possessed of wide and varied technical knowledge. They are called upon to identify all sorts of trees, to make maps, to devise and carry out plans for protecting the forests from fire, to recognize and control the attacks of insect pests and fungus diseases on trees and to collect seed and produce young trees in nurseries. And, besides these things, there are a number of homelier matters to which the forester must be equally ready to turn his hand. He must be able to pitch in with axe and spade, to help make a trail, to mark trees, and to do all sorts of manual labor. And then he must, in addition to all this, be able to sit down in an office, draw up comprehensive reports, make contracts for the sale of lumber, and do other work of a like nature.

Few men have such a variety of duties to perform as does the forester, especially if he holds an executive position. There are, of course, men with less taxing work, who act in the capacity of assistant foresters, and there are also men known as "forest rangers." The rangers are not required to have any extensive technical knowledge, but they must be well versed in all the practical side of forestry. They are the subordinates of the foresters, and carry out the plans and routine work outlined by the latter.

It will be seen from these duties of the forester which have been mentioned that he must be a man possessed of a large number of different qualifications. Much of the forester's time is spent in the woods, frequently with very few comforts or even conveniences, and so he must naturally be a man of strong physique and healthy constitution. A vigorous body is necessary not only for the rough life which the forester is obliged to live but also for the hard manual labor in which he must so often engage. He must be a man who is fond of the outdoors, who does not mind traveling about a good deal, who is not afraid of hard work and discomfort and who is ready to turn to any sort of task which may be required in the discharge of his duties.

He must be observant and ingenious, and must be able to adapt himself, mentally and physically, to the circumstances in which he may find himself at any time. A high degree of executive ability is also necessary for the forester's work, and with it should go sympathy and tact in handling his men. Love for his work, and a realization of the fact that it is a most important form of public service, may complete our list of the qualifications which the forester should possess.

All these characteristics must be supplemented by a thorough knowledge of forestry. A number of subjects in which the forester must be proficient have been mentioned. In order to obtain a knowledge of all the technical aspects of forestry, intensive training is needed. This the forester may best obtain by taking a course in one of the well-known universities or colleges which offer instruction in forestry. In some cases such a course lasts four years, in others it is combined with an academic college course and covers a period of five years and in still others it forms a two-year postgraduate course. In all cases, theoretical and practical work are combined in these courses. Mathematics, surveying, chemistry, geology, dendrology, silviculture, forest engineering and forest management are among the subjects studied. Short courses for the training of rangers are also given in a number of institutions. These are anywhere between two months and a year or two in duration. A complete list of schools offering forestry and ranger courses is to be found in the *Government Bulletin*, "Forestry Pursuits," listed in the bibliography at the end of this chapter.

In order to enter the federal or state Forest Service, it is necessary to take a civil service examination and await appointment. Rangers usually enter the service at a salary of $1,100, and may eventually make an average of $1,500 or $1,600 a year. Foresters are at first appointed to positions at salaries of $1,100 or $1,200, but upon being promoted to more responsible posts receive higher pay. The average forester does not make much above $2,500 or $3,500, though some few have an income of $5,000. State foresters are generally a little better paid, their salaries ranging from about $1,800 to about $4,000 yearly. Foresters who enter the employ of lumber, railroad or paper manufacturing companies, or of the owner of a large estate, may find greater financial reward than those in the public service, but the latter find in their work a certain attraction, due to the official standing which the public service affords.

A forester can hardly look forward to wealth, but there are other considerations besides financial ones to be taken into account in estimating the value of an occupation. Perhaps the chief of these considerations is the personal satisfaction which one may find in his work. There are a number of disadvantages connected with forestry as a vocation—the work is hard, and the life of the forester is often extremely uncomfortable and migratory; but there are, on the other hand, many compensations for these things. Hard though the life may be, it is a thoroughly wholesome one, and to many men there is a certain fascination in the very fact that in their work they will be forced to struggle against many obstacles. It is work which is rich in opportunity for true usefulness, and offers to the enthusiastic man a certain inspiration in the close contact it affords him with coworkers who have high ideals of public service and, further, in the thought that the work he is doing is as much for the benefit of future generations as for his own.

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CHAPTER XXV

INSURANCE

The fact that all people are subject to certain common dangers has made possible the rise and development of insurance. Insurance is simply the indemnifying of an individual for loss suffered, through the contributions he and his fellows have made towards a common fund established for this purpose. The loss sustained by the individual is thus rendered less heavy for him by being divided up among a large number of people. In this way insurance offers relief without charity, in the event of a person's suffering a prescribed injury or loss. Usually it does not pretend to return the thing actually lost, but simply to make good its monetary value. The man who takes out a life insurance policy does not expect that it will keep him from dying, or restore life to him. But he does know that in the event of his death, his family will receive a sum of money in lieu of the amount that he would have been able to contribute towards its support, had he continued to live. Similarly, the man who adequately insures his home against fire, is certain of receiving a sum equal to its value, should it actually be damaged or destroyed by fire.

The social importance of insurance is a very great one; a fact which has not, till recently, been recognized. But as the appreciation of its meaning and value continues to grow, the demand for expert workers in the field keeps pace with it. These experts may be placed in several principal classes—as actuaries, agents, inspectors, investigators or adjusters. The actuaries determine, by scientific processes, the rates to be charged for different types of insurance, under varying conditions. The agents undertake the work of selling insurance policies. The inspectors attend to the examination of property of various sorts, before and at intervals after it has been insured. The investigators inquire into the loss suffered by a claimant for insurance; and the adjuster attempts to adjust differences between the insurance company and the claimant, or between a claimant and a client protected by the company.

There are numerous sorts of insurance, some of which offer the insured not only indemnity in case of loss, but protection and service against lawsuits. In automobile insurance, for instance, the insured may receive a certain amount of money in case his car should be damaged or destroyed. And, besides this, the company might defend him in a lawsuit resulting from damage or injury inflicted by him while operating the automobile. The vast field of insurance may be roughly divided into the following classes: personal, including life, health and accident insurance; casualty, including fire, marine, title, automobile and burglary insurance; and social, including employers' liability, workmen's compensation and industrial group insurance.

The men in the insurance field must be specialists. They must confine themselves to work in one of the subdivisions mentioned, in order to be of real use. And even in their special field they will probably become expert in one of its minor subdivisions, for, whatever position he holds, the insurance worker needs very thorough knowledge, and so his work must necessarily be limited to effort along one particular line.

In order to insure people, the insurance companies must have some sort of basis on which to work, and this is furnished by the actuary, who computes insurance rates. In order to determine what rates should be charged under different circumstances, the actuary must carry on work of a very scientific nature. Take as an example the life insurance actuary. He must investigate and analyze the natural laws affecting human life, and the social, economic and other factors which also serve to influence it. He works on the principle of averages. He cannot determine the rates to be charged according to the circumstances surrounding each individual policyholder. He must analyze a broad field, and from the results of this analysis work out average charges. The actuary's work is highly technical. For its proper performance he needs a number of special abilities and a thorough education. He must be of an analytical turn of mind, have a real liking for mathematics, be capable of concentrating upon difficult work and, perhaps most important of all, he must have the ability to interpret correctly the facts and figures he has gathered.

It is wrong to think that, because his work is so largely mathematical in nature, a liberal education is not necessary for the actuary. Besides having a thorough knowledge of mathematics, he should have some acquaintance with economics and sociology, be familiar with the general principles and practice of insurance and of finance and should know as much as possible about the particular branch of insurance in which his work lies. Thus, if he is an actuary for a marine insurance company, it is his business to know as much as possible about the sea and its perils, about vessels and cargoes, about marine laws and other such matters. It is usually best for the would-be actuary to take a full college course, specializing in mathematics, taking practical courses in insurance and spending his vacations in the actuarial department of some large insurance company. In this way he will be gaining a broad education and, at the same time, preparation for his profession. Before he is admitted to the ranks of the full-fledged actuaries the student will be obliged to take certain examinations given by the Actuarial Society of America (New York City), from which further details may be obtained upon application.

The insurance agent, whose business it is to secure new clients, is today more than merely a salesman. It is, of course, important that he should be a salesman, but, in addition, he must be an insurance expert, able to advise his clients as to the proper sort and amount of insurance it is best for them to take out. In other words, he should have a broad general knowledge of insurance principles and very specific and detailed knowledge of the policies in his special field of the insurance business. The insurance agent's personality is one of his greatest assets. He should be enthusiastic, convinced of the benefits of insurance, so as to be able to convince others of them. He should know human nature and have the tact, patience and perseverance to turn his knowledge to good account. He should be a quick, clear thinker, in order to find good arguments, and should be able to express them in simple, direct and forceful language. The insurance agent should, further, be honest and industrious, and economical of his time; he should be confident and patient enough to follow up every prospect to a successful conclusion, and be able to do so without getting himself disliked.

Some agents insure individuals; others, groups, as, for instance, a group of factory workers. They sell life, fire, marine, credit, accident, liability and various other forms of insurance. But in every case the same general qualifications are needed, and the same fundamental knowledge is required. The insurance agent should have a knowledge of sociology, economics, finance, psychology and salesmanship. His work, properly undertaken and carried out, is professional in character. He should be able to give clients sound advice of real service to them. For this reason he needs a good grounding in the subjects mentioned and, of course, in insurance.

A college education with special courses in insurance, though not absolutely essential, would be of great help to the insurance agent. Many insurance companies maintain courses in insurance and salesmanship for their employees, and there are schools of salesmanship and university extension courses in selling and insurance.

The insurance inspector is employed by casualty, particularly fire and marine, insurance companies. Before property is insured against fire, for instance, it is usually examined by an inspector. If it is a factory which is to be insured, the inspector investigates the raw materials used, the operation of machines, the discipline of employees, the fire prevention and extinguishing apparatus in the building and the construction of the building itself. In other words, he examines every detail which might in any way contribute towards the fire hazard. In order to do such work adequately, a large amount of technical knowledge is necessary. Besides this, the inspector must have the ability to describe his findings clearly and fully, for the action of the insurance company in accepting or rejecting the "risk" depends upon the report he makes. The inspector for a fire insurance company should be thoroughly acquainted with the methods of fire prevention, should be familiar with insurance practice, must be observant by nature and have plenty of common sense and tact. Similar qualifications and specialized knowledge in his line are necessary for the marine inspector.

Insurance investigators examine into the reported loss suffered by a client. In some cases, this is a relatively simple matter. In case of life insurance, for instance, or of accident insurance, the investigator has but to ascertain whether death or injury has actually occurred. In other cases the investigator's work is much more difficult. He may, for instance, have to inquire into an accident suffered by an individual through a man insured by his company. In this case the insurance company may have to pay damages to the injured individual, so the investigator must find out whether the accident actually occurred under circumstances provided for in the policy. If it did, the insurance company will be responsible; otherwise the policyholder himself will have to pay the damages.

The investigator of burglary insurance claims will often have to contend with fraudulent practices. Many times robberies are simulated for the sake of collecting insurance, and it is the duty of the investigator to discover such deceit. The actual work of the investigator is the investigation of the circumstances surrounding a claim for insurance, the interviewing of witnesses and the making of a report to the company.

The investigator must not only know the general principles of insurance, but should be thoroughly familiar with all types of policies in his field, so that he may be able to decide whether a claim is a just one. In order to carry on his work successfully, he must be alert and observant, and extremely tactful.

The work of the adjuster also calls for a great amount of tact. It is his duty to ascertain the money value of an injury suffered by an individual, through the agency of an insured client. Then he must attempt to persuade the injured person to accept a cash settlement of his claim, instead of starting a lawsuit against the insured, for this lawsuit would have to be defended by the insurance company. In order to succeed in his work, the adjuster must work with speed and diplomacy, making a favorable impression upon the claimant, and utilizing many of the qualities and methods of the salesman in his efforts at persuasion.

For the work of inspector, investigator or adjuster, it is well to have taken some courses in insurance principles and practice. Training for the actual work carried on by these men is usually supplied by the insurance companies themselves; but the development of the worker into an expert is largely a matter of experience in observing human nature, and in acting upon one's observations.

The field of insurance is a very attractive one for the young man who contemplates entering it. Although a large number of men are employed in it, there is room for many more, for every year thousands of people are ready to take out new policies. The work of insurance men is interesting, for it brings them in contact with many different types of people, and many different phases of life and, if well done, the work is remunerative. The actuary is paid a fixed salary, which is usually a very good one. The agent is paid on the commission basis, so that his income depends upon his own efforts and ability. Investigators, inspectors and adjusters earn from $2,000 or $3,000 a year up. Work in the field of insurance demands a constant output of energy—in many cases both physical and mental. But it brings a great reward to the conscientious worker in his realization of the fact that the work he is doing is of material benefit to society, reducing want and increasing thrift, safety and individual independence.

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CHAPTER XXVI

INTERIOR DECORATION

The home is the center of civilized life, and its influence strongly affects a person's personality, character, ideals and ambitions. If it is to be truly a home, and not just a shelter, it should reflect and express the spirit of those who live in it, and should, at the same time, conform to the elements of good taste and artistic principles. In many cases, people do not know how to go about arranging an interior so that it will be both home-like and artistic. If they realize their inability to do so, they very often call to their aid a professional expert in the arranging of homes—the interior decorator. The profession of interior decorating is a very new one, for the whole idea of the importance of the effects of household environment upon the individuals within it has arisen only within the last few years. As a knowledge of these effects and of the usual incompetence of the layman in furnishing his house has grown, the demand for trained experts in interior decoration has increased with it.

The interior decorator should not be thought of as merely a furnisher. In its broadest sense, the work of interior decoration is the interpretation of the individuality of the family or other occupants of the house, and the expression of this individuality in terms of the artistic design and arrangement of the home. The duties which the interior decorator must perform in the carrying out of his work are numerous and varied. The first thing he must do, when called upon to arrange a home, is to find out, by personal observation of the people comprising the family, what their characteristics are and what sort of home they prefer and should have. To do this, he must by nature be observant and sympathetic, and be able to comprehend the life of the particular persons with whom he comes in contact. When the wants and needs of the family have been considered, it will next be his duty to ascertain its financial circumstances and how much money he may reasonably spend upon the work to be done. When these preliminaries have been attended to, he must proceed to work out the most artistic environment possible to suit the life of that family.

The planning and carrying out of this environing scheme constitute the actual technical work of the interior decorator. Keeping in mind always the function for which each room is intended, he must decorate and furnish a house so that it will constitute a unified and beautiful whole. The finishing of floors, ceilings and woodwork, the designing or planning of wall, floor and window coverings, the designing or selecting of draperies, furniture and bric-a-brac, the selection and hanging of pictures and the choice and disposal of other objects and ornaments in the room are among the duties of the decorator. Often he is given liberty to buy, or have made, new furnishings; and sometimes he is given some new ones and, for the rest, obliged to adapt old materials to new arrangements.

In the performance of his duties the decorator is called upon to design and plan, and to supervise the execution of his plans, and is often entrusted with large funds in order that he may carry out his work properly. This brings us to the business side of his profession. This involves the estimating of costs of materials and labor, the making of specifications and contracts, the buying and marketing of materials and the hiring of workmen. The interior decorator will always do well to consider economy. Extravagance does not necessarily mean usefulness or beauty of result, and the good interior decorator will never be guilty of too extravagant buying in behalf of his client. His work does not consist of supplying goods, but rather the ideas as to the best disposal of whatever articles of furniture there may be in the rooms.

The interior decorator may be viewed from three principal angles—as the psychologist, the artist and the man of business. The highest type of interior decorator will combine the qualities and knowledge of these three types. He will have a keen psychological insight and quick, sure sympathy, which will enable him to judge the people with whom he comes in contact and to understand their characters and lives. He will have decided artistic talent, unerring taste and the ability to produce, by means of selected decorative parts, a unified whole. The decorator should have executive ability also, in order that his orders may be properly carried out by the workmen under his personal supervision, and also that he may be able to render the best possible account of the sums of money expended by him.

The decorator's knowledge must extend over a wide field. He should, in the first place, have a good general education, not only as a foundation for his special studies, but also that he may be properly equipped to meet, upon their own level, the cultured people with whom he will often have dealings. Some study of psychology will prove of help to him in his attempts to judge people and to surround them with an environment suitable to their natures. A knowledge of some mathematics is desirable, that he may have an understanding of proportion and a sense of dimension. A knowledge of languages is also worth having, that he may become acquainted with some of the vast store of literature from which art has gained, and still is gaining, so much of its inspiration. A familiarity with history will enable the decorator to understand some of the many factors and personalities which have influenced art, and will also acquaint him with the artistic expression of many races and ages.

Then he must have a thorough knowledge of the fundamental art principles. He should understand clearly the laws of balance and movement, of perspective and space division and of emphasis. He should know the theories and the meaning of color, and its utilization for effects of light and shade. He should have a clear understanding of the principles of architecture, and a very thorough knowledge of design and decorative principles, of the historic periods of decoration and of their modern adaptation and application. He must be a draftsman and, if he has some knowledge of the various crafts supplying him with material for his work, so much the better. He should know the history of textiles, be familiar with their qualities and value and should have a very extensive knowledge of furniture.

Probably the best way for the interior decorator to obtain adequate training for his profession is for him to study at some art school of good reputation, and then to enter upon a period of apprenticeship with an established decorator of sound training and manifest ability. In this way the student will obtain much needed practical experience in the technical work to be done. There are numerous schools giving instruction in interior decorating. Some of these schools offer day and evening courses, some charge no tuition fees and in others the cost of following the prescribed courses amounts to several thousand dollars. The prospective student of interior decorating may write to the Art Alliance of America, in New York City, to obtain information and advice as to schools offering suitable courses.

The student will find that there are opportunities to enter the employ of another more experienced interior decorator, to work for some large department store or firm of interior decorators or to go into business for himself. The last is seldom possible for the beginner, for experience and reputation count in this profession, as they do in all others. Once fairly started on his way, however, the interior decorator should have no difficulty in securing sufficient clients. The profession being so new, it is not yet crowded and, even were it so, there would always be room for the man of real talent and ability. The very fact that the profession is so young, however, involves some difficulties. The decorator will very often have to contend with ignorance and prejudice. Often people, not realizing the ends he has in view, and not themselves possessed of sufficient good taste or artistic knowledge to arrange for the decoration and furnishing of their own homes, will make the work of the decorator extremely difficult. They will attempt to change his plans, have him carry out their suggestions or will interfere with his work in other ways. The decorator must make use of all the patience, firmness and tact he possesses to induce such people to await the finished results of his efforts and to accept his advice.

In practically every other way, however, there are only advantages to be found in the profession. It is difficult to say what the earnings of the interior decorator are likely to be. As an apprentice, his salary will naturally be a low one, but as his experience and reputation increase he will have opportunities to earn large fees. If he is employed by a firm of decorators, he will probably work on a salary, which will vary according to the standing of the firm and the ability of the individual decorator. If he is in business for himself, the decorator's earnings will depend upon his own ability and the type of clients with whom he has dealings. When a decorator does work for large hotels, or wealthy clients, his earnings may amount to many thousand dollars a year.

The matter of doing interior decorating for hotels and similar places differs somewhat from the arranging of private homes. In the case of a hotel, the decorator cannot express the individuality of one person or one group of persons, such as the family. He must, therefore, always keep in mind the purpose for which the hotel or other institution exists and the sort of people to whom it caters, and attempt to express the spirit of the place, in relation to its patrons, in the furnishing of its rooms. In hotel decorating as in home decorating he must not be merely an assembler of articles of furniture, but should go about his work with the intention of artistically expressing the characteristics of those who frequent the place.

For a man of artistic temperament, who loves to see things beautifully, harmoniously and appropriately arranged, and who enjoys planning and carrying out such arrangement, interior decoration is a profession of many advantages. It offers him an opportunity to be constantly in the midst of beautiful objects and to produce, with their help, interiors which, while artistic, will never be unsuited to those who will have to live in them. It offers him a wonderful chance to study humanity and to express his observations through art. It provides congenial, beautiful and, above all, highly useful work. Some interior decorators feel that, because their work belongs so exclusively to those for whom it is undertaken, they themselves have nothing to show for it. But they may have the satisfaction of knowing that they are contributing very directly to the education of the public, and that the standards of simplicity, unity, individuality and good taste which they set in the homes which they decorate will inevitably influence those who live in these homes. Their work may not be of the kind which lends itself well to public exhibition, but it is a vital factor in the artistic development of the nation and, as such, it will continue to be of ever-growing importance.

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CHAPTER XXVII

LAW

Civilization and law go hand in hand. Law guarantees the safety of the life and property of the individual, and the integrity of society as a whole. The lawyer's profession is, therefore, one of the most necessary and important ones, and the young man who wishes to enter upon the law as his vocation should realize how high and worthy a profession it is.

Many people think of the lawyer as a man having, by reason of his eloquence, a perpetual series of triumphs in the courtroom. It is true that there is occasionally some such romantic happening as sudden fame for a lawyer of great eloquence, but back of his persuasiveness and his power to speak well will usually be found a strong fund of legal knowledge. No man can succeed in law without a thorough knowledge of the principles of law and their practical application. The law requires a very thorough preparation on the part of the student. But before he begins his studies it will be well for him to make sure that he has certain qualities which will fit him for this profession.

It goes without saying that one of the first of the qualities he should have is honesty. A good moral character is absolutely essential for the lawyer. His work will often offer him temptations. He frequently holds in trust the money and property interests of strangers, and he must be able to conduct these interests to the best advantage of his clients. At times he may be approached by people who will try to induce him to act in an unethical way, and in such cases he will need a strong moral sense to withstand their offers.

The lawyer must be a man of industry and persistence. Law is a subject which requires constant study and concentration, and in the practice of his profession the lawyer must work very hard. Once he has determined on a course of action, he must have sufficient persistence and endurance to carry it to its end. In addition, the lawyer needs good judgment and sound common sense, imagination, foresight and a knowledge of human nature.

All these are necessary if he is thoroughly to understand the facts of the cases on which he is engaged, and be able to foretell, to some extent, the effects of his arguments on judge, jury and opposing counsel. The lawyer must be ever on the alert, quick of mind and vigilant. If he has poise and self-confidence, his arguments will make a far better impression than if he lacks these qualities; and he should, of course, have the power of logical analysis and of clear expression.

No young man should consider becoming a lawyer unless he is fond of study. Law must be studied not only while one is preparing at school for admission to the bar, but during all the years of active practice. Every day decisions are made, every year laws are passed, which must be read and carefully studied. Every individual case also requires special research and study, and in preparing certain cases the lawyer is often obliged to look up matters of which he may have no previous knowledge. There are cases involving all the sciences—matters where some knowledge of chemistry, geology, physics or physiology may be needed, others for which a thorough knowledge of history may be essential—in fact, cases concerned with hundreds of different subjects. Of course, no lawyer is expected to know all these subjects—experts are called in to give their testimony whenever needed. But in order to understand, and perhaps combat, such testimony, it can readily be seen how desirable it is for a lawyer to have as extensive an educational background as possible. For this reason, most of the first-class law schools require that students shall have had from one year to a full college education. The law course is, in most cases, of three years' duration, with tuition fees varying from about $300 or $400 a year to a nominal sum. Most of the better law schools are either part of, or connected with, a college or university.

When the student has finished his work in the professional school, and has passed his bar examination, he is ready to begin practice. Many young men start as assistants to lawyers already established, in order to gain experience and, when they feel that they are able to stand upon their own feet, it is usual for them to establish themselves independently in their own offices.

The lawyer has a choice of a number of special fields of legal activity. The two chief divisions of law are civil and criminal. The criminal lawyer handles cases dealing with offenses against society or the state. The civil lawyer usually specializes in one of the many branches of civil law practice; thus, he may handle only damage cases, such as suits resulting from accident, trespass and similar causes. The real estate lawyer specializes in conveyancing of properties; he examines titles, holds funds for investment and administers estates. The patent lawyer acts as an agent for people desiring to secure patents from the government, and acts as attorney in suits involving the infringement of patents or copyrights. The admiralty lawyer handles cases involving accidents or other causes at sea. The general practitioner renders any sort of legal service which may be needed in the community. Most country lawyers are general practitioners, and for this reason it is often a good idea for the beginner to start his law work in the country. Not only is he likely to get more varied experience there, but he will probably fare better in a financial way than the young lawyer in the city, where competition is naturally very much keener.

The lawyer's work is carried on in the office as well as in the court. In fact, the majority of lawyers seldom appear in court, but confine their activities to office practice and non-litigant business generally. Office work includes the drawing up of legal documents of all kinds—wills, mortgages, contracts and so forth; the examination of titles to property to determine their validity; the collection of accounts; and acting as general legal adviser to clients.

The more public aspect of the lawyer's work is his courtroom activity. But before he is ready to take up his case in court, there is much routine office work which the lawyer must do. He must consult with his clients, read and study accounts of similar cases and the laws pertaining to each special case and write pleadings and briefs. In the courtroom the lawyer examines witnesses, produces evidence of various kinds and addresses arguments in favor of his case to the judge and jury.

There are numerous advantages in the law, which have always made it a profession many men have been eager to pursue. The lawyer, in smaller communities especially, is looked upon by other people as a leader, and, indeed, his training and his knowledge of human nature and human affairs should make him capable of being a leader in all public movements. The lawyer who succeeds in his work has many chances of distinction. Public attorneys and judges are chosen from the ranks of lawyers and, though very often a lawyer has a much larger income through private practice than as a public official, yet the honor connected with the latter position makes it a coveted reward. It seems that in politics lawyers have more chance of "arriving" than any other one class of men. They are elected to the legislative bodies of the government because of their knowledge of law, and often also because of the reputation for leadership which they may have made for themselves. Many of them are elected to executive positions also—mayors of cities, governors of states and presidents of the country are in most cases lawyers. There is no doubt that the profession of law can be a stepping stone to great honors and service.

Many lawyers, though well qualified to do so, never practice their profession. The demand for lawyers in business is sufficiently great to attract large numbers of law-trained men to its ranks. Railroad executives, bank presidents, publishers and other leaders in business and industry frequently are law-trained; and the man who combines good business ability with legal training materially increases his prospects of success.

The chief disadvantage of the profession of law is its exceedingly overcrowded state. This does not mean, however, that there is not room for the really capable. The young man who knows the law and has the proper qualities of a lawyer, who is energetic and industrious, can make a name and reputation for himself despite the fact that there are thousands of other lawyers. The beginner naturally cannot expect a high salary. As has already been said, most young men start as assistants to already established lawyers. Others gain experience during their years of preparation by acting as clerk in a lawyer's office by day, and studying in the evening.

The lawyer's clerk is paid, on an average, about $1,000 a year. The practicing lawyer's income varies greatly. A capable lawyer who has been established a few years may have all he can do to earn a bare living, or he may make anywhere between $4,000 and $10,000 a year. Very few lawyers earn more than $10,000 a year, and only about 2 per cent of the lawyers of the country earn more than $25,000 a year. Many corporation lawyers, who act purely in the capacity of advisers, receive exceedingly high compensation, but these men are, of course, out of the ordinary.

The young man who wishes to become a lawyer must remember that study and hard work are the bases on which he can found a successful career in the law, as in any other profession.

As in everything else, he will, even when he has already been admitted to the bar, have to be prepared for the beginner's period of struggle, and his chances of advancement and success will depend upon his capacity for hard work and serious study, and his realization of the important service he can render the community by honest and whole-hearted endeavor.

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CHAPTER XXVIII

LITERARY WORK

Literary work is a term broad enough to cover the great variety of writing which is daily done to amuse, instruct or inform the public, or simply as a means of self-expression for the writer. Upon literature depends, to a large degree, the progress of mankind. All men cannot have brilliant ideas or noble thoughts, all cannot make new discoveries or come into contact with great personalities and take part in unusual events. But those few who have fine things of the spirit to express, or wonders of the universe to describe, or knowledge of many sorts to impart may do so and make these things part of the lives of their fellows by writing of them. The written word travels far and lasts long, and so literature is an art which diffuses and preserves knowledge and beauty. It serves as a common bridge of understanding between individuals, nations, races and ages.

Those who write do so, usually, because they are impelled to by the universal desire for self-expression. The poet writes out of the fullness of his heart; the story writer, to share with others the fancies evolved by his imagination; the scholar, to give expression to his knowledge; and the journalist, to spread broadcast a record of what has just occurred.

Of all writing, perhaps the most passing, and at the same time most influential, is that of the journalist. The influence of the newspaper upon the life of a nation can hardly be overestimated. It is without doubt the most powerful existing agent affecting public opinion and, through it, public action. Our knowledge of what is daily happening about us is obtained from the newspapers, and our opinions of these happenings are largely based upon the way in which they are reported, and the manner in which they are editorially commented upon. The newspaper man's work thus assumes tremendous importance. It is work which entails real responsibility, and which should be entered upon as in the service of the public.

A large modern newspaper is an exceedingly complicated affair, and many sorts of workers are needed upon it. The man upon whom the entire existence of the newspaper depends is the reporter, or news gatherer. It is the reporter's duty to go in search of news and, having found it, to report it in clear, effective language, which will immediately be intelligible to the reader. The reporter is not simply turned loose and told to bring back news. Usually he is assigned to report some definite event which it is known will occur. But in many cases he comes unexpectedly upon something which is a news possibility, and he must be able to recognize it as such. This "news instinct" is one of the most necessary qualifications of the reporter. He must have the ability to see, in a perhaps commonplace happening, that slight difference which will make it "news." With the news instinct must go the ability to write quickly, correctly, briefly, clearly and interestingly of what he has seen and heard.

The work of the reporter will take him into many different situations. He must be able to adapt himself to each of them, and so should be a man of large tact and diplomacy. Much of his work consists of interviewing people, and the successful interviewer must be a skilful but unobtrusive questioner and an excellent listener. In order to be able to gain the confidence of those who are the source of some of his news, he must have a good understanding of human nature and know how to utilize it. As for his writing, it has already been said that it must be quick, clear, simple and direct. It should be of the sort which will immediately attract attention without resorting to sensationalism to accomplish this.

The more a reporter knows, the better for him. A diversified knowledge will help him to an understanding of, and interest in, many things, will make him a better observer, and usually a better writer. Besides having a generally good and broad education, which need not necessarily have been acquired at school, but which may, in part at least, be the result of wide experience, the reporter should have some special knowledge of newspapers and their making. In order to carry out his work properly, he should be thoroughly familiar with the city in which he is employed; and he should keep abreast of current events, and know what is going on in the world.

The reporter's work is not easy, but for an eager, enthusiastic, open-minded young man, who finds actual contact with many phases of life attractive, it is often a profession of great fascination. The reporter should be of a strong physical constitution, for his work means long and irregular hours, exposure to bad weather, periods of great physical and mental tension and, in most cases, not especially attractive pay. But it means, also, a chance to acquire a broad education, and to keep one's mind alert and active.

All newspaper men are not reporters—the editorial staff of a newspaper is exceedingly important, and the duties of the various men who constitute it range over a wide field. In general, editors and editorial writers are recruited from among the reporters of special ability. Like the reporter, the editor should be of an observant nature, interested in many things and able to keep in touch with them easily, and should have the ability to express himself easily in impersonal writing. In order to render the public real service, by seeing that the true facts are under all circumstances presented, and that editorial expressions are in all cases sincere, the editor must be a man of high ideals and of absolute probity.

The direction of the entire paper, outside of the business department, falls to the editor-in-chief, who usually writes the leading editorials. The great responsibility of his position requires that he be a man of unusual executive ability, and of much discrimination. He appoints the other editorial heads, and they and their subordinates are responsible to him. He should know how to handle men and how to handle news, and so he must be a man of broad experience and of good journalistic education.

Among the other workers in the editorial department are the editorial writers, who produce all editorials except the "leaders"; the managing editor, who usually does the actual employing of heads of subdivisions; the city editor, who assigns work to the reporters; the night editor, who is in charge of a morning paper during the night, while it is being got out; the news and telegraph editor, who edits and fills out news items received by telegram; and various special editors. Among the special editors are those in charge of the literary, musical, dramatic, sporting and other departments. All these men must have expert knowledge of the field in which their work lies, a good general knowledge of newspaper work as a whole and the ability to write with facility. Editorial work does not offer quite so many physical difficulties as reportorial work, but it is exacting nevertheless. However, it is work which is extremely interesting and "alive."

It is difficult to say what financial rewards the newspaper reporter and editor may expect. Salaries depend upon the size and type of the journal and the ability of the worker. Some reporters of experience receive less than $30 a week, others are paid $3,000 a year or more. Editors make anywhere from $2,000 a year upward, with the vast majority earning less than $5,000; some very few exceptions, who combine great business ability with writing, earn $50,000 or more.

Natural abilities, of course, count for a great deal in journalism, but special training for a career in newspaper work is also important. The fact that reporters and editors should be as broadly educated as possible makes it desirable that they go through college. In the past this was not considered so necessary, but now the value of a college education is an established fact. Then the prospective newspaper man should take, either in combination with or after his college studies, some courses in journalism. These courses, given at numerous colleges and universities, both during the day and evening, teach the student the technique of his vocation. He learns how to go about the business of gathering and writing up news, how to produce effective editorials, and how to express himself in fitting language. All this knowledge may, of course, be acquired by actual experience on a newspaper, by a man who has had no preliminary instruction. But such instruction is a time saver, and for this reason valuable, for the men who know what to do when they enter upon their duties are likely to obtain more rapid promotion than those who are obliged to depend upon slowly acquired experience to show them how to proceed with their work. A complete list of schools offering journalism courses may be found in the government publication, "Instruction in Journalism in Institutions of Higher Education" (prepared by James Melvin Lee), *Department of the Interior, Bureau of Education Bull. No. 21,* 1918, Government Printing Office, Washington, D. C.

Although there are many men in journalism, there are as many or more who are engaged in literary work of other kinds. Novels, short stories, poems, essays, articles, plays and moving picture scenarios are every year produced in great numbers. In order to write any of these types of literature, the author must be endowed with a certain amount of literary talent, with imagination and originality. He should, of course, attempt to master the technique of the particular literary type in which he is most interested, and should have certain special abilities according to this type.

There are various sorts of writers who contribute articles and essays to magazines and other periodicals. These people either have a store of knowledge which renders them specialists in a certain field, or else they have that broad sort of knowledge and observant turn of mind which may enable them to write successfully of many different kinds of things. The writer of magazine articles must, like all writers, have imagination and sympathy; he should be able to dress old ideas in new garments, and should know as much as possible about the various types of articles and the magazines which publish them. When he is writing an article, he should keep in mind the periodical and the class of readers for whom it is intended, and should fashion it accordingly.

The author of articles deals generally with facts—the writer of stories, usually with fiction. His fiction is, however, based upon reality and, in order to give it the semblance of life, he must be observant and imaginative, must feel and see intensely everything which he writes, must have a sense of beauty and of the ideal and should be a man of fine mind and keen intellect. The short-story writer should know the technique of the short story, and the novelist that of the novel. But very often stories which are technically deficient are raised to great heights by the insight and sympathetic imagination of the author, and by the power of clear and beautiful expression.

The playwright needs much the same qualities as do the novelist and the short-story writer. He must have a knowledge of human nature, an original viewpoint and be familiar with the technique of the stage. The writer of motion picture scenarios must be a man of ideas, of dramatic imagination, and needs, more than a knowledge of writing, a thorough familiarity with the principles of plot construction, since the motion picture is primarily an unfolding of action.

Most writers are "free lances"—that is, they write, usually, as the spirit moves them, and then dispose of their productions to publishers who are willing to accept them. Some men, as, for instance, writers of special articles for periodicals, and authors of scenarios, are at times employed in salaried positions. Most authors, however, produce their work independently. There is another kind of writer, to whom is owed much more of the literature filling our magazines and books than is generally known.

This is the "hack writer." He is quite often a "Jack of all trades" in the writing line. According to demand, he writes an article on some special topic, turns out a short story or does almost any sort of literary work. The hack writer is not quite so pitiful a creature as he has sometimes been drawn. In order to succeed, he needs a store of varied knowledge, versatility, an assimilative mind and keen business sense. Many authors serve their apprenticeship as hack writers, while they strive to perfect themselves in some one specialized form of writing.

It is practically impossible to say what financial returns a writer may expect from his work. Men of the greatest ability have died poor, and others of mediocre talents have produced a "best seller" or two which brought a fortune. The only thing a writer can do is to write as much as possible and as well as possible, and attempt to dispose of the best of his manuscripts. Sometimes talent is recognized and rewarded, and sometimes it is not. Whether it is or not, however, the writer will usually have found a large amount of satisfaction in the mere transferring to paper of his thoughts and emotions.

The writer cannot be made by school courses. He can be further developed by them if he has within him the spark of talent, the love of writing and the desire to express himself through it, and if he has patience, perseverance and a good mind. In this case, such training in writing as he may receive at school will probably improve his technique, but without the innate qualities mentioned no amount of courses in writing will do him any good.

As a profession, writing is, as has been said, financially uncertain. But otherwise it is almost ideal. It gives one personal independence, leisure to enjoy life, and a chance to grow intellectually and spiritually. Furthermore, it is what everyone craves—a means of expressing one's own personality, and of influencing the world to some degree through this expression. And then there is always the chance that fame may some day be one's reward.

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CHAPTER XXIX

THE MEDICAL PROFESSION

One of the most useful and respected members of society is the doctor. This has at all times been the case; in ancient times "wise men," skilled in the knowledge of healing plants, were often the leaders and controllers of their people. In the case of the American Indians, the "medicine man" was usually the most feared and respected man in the tribe, for his relatively small knowledge of healing seemed to his fellow tribesmen a divine attribute and, in addition to being a doctor, he was a sort of priest—an intermediary between the tribe and the spirits which were thought to control it; he was considered a prophet and an interpreter of the divine will.

Nowadays the physician is looked upon principally as a man of science, trained in the prevention and cure of disease; but the old idea of the doctor as something more than a healer of physical ills alone still persists. Many people confide in their physician as they would in no one else. To him they bring their spiritual as well as their physical ailments, and the doctor, especially the old type of "family doctor," is often as much a general adviser and counselor as a physician.

The profession of medicine is a very noble one. The medical man goes through life caring for others, and much of the progress towards physical safety and health which the world has made is due to his efforts. Not only does he, by research work, discover the causes and cures of ills, and then apply this knowledge, but he is also a very potent factor in reform of all kinds. The betterment of sanitary conditions in tenements, factories, prisons and public buildings is largely his work. He has had, and still has, a great share in the establishment and proper administration of hospitals and public dispensaries and clinics, and in devising better methods of caring for the dependent and in any way defective classes.

The medical profession offers a very wide field of service. Most people when they think of the physician, think of him as a general practitioner. The ordinary "regular," or "allopathic," physician is usually a general practitioner. His practice is generally a private one, and he attends to cases of all kinds, advising and prescribing for patients, and performing minor operations. The general practitioner of the "regular" school treats his patients according to established precedents. He applies such treatment as his own experience and the experience of other physicians tell him has been effective in similar cases. After a careful physical diagnosis, he prescribes such medicines as are known to have had desirable results in similar cases.

The homeopathic physician believes in helping nature in its disease-fighting efforts by the administering of very small doses of medicine. He does not sanction the deadening of pain by opiates but, considering pain as a warning of something wrong in the body, advocates the removal of its cause. Homeopathic physicians have as much opportunity in private practice as "regular" physicians, for people are becoming more and more used to the doctor who "doesn't give so much medicine." But their chances of being appointed to positions in the public health service are slight. Most of the doctors who constitute the examining boards of the various branches of public health service are of the "regular" school, and look with some disfavor upon the homeopathist.

The osteopathist believes that every illness is brought about by some mechanical cause, such as pressure of bones upon nerves, resulting in a perversion of nerve functions. His remedies are, therefore, usually mechanical ones—massage, the application of braces and other means of removing the offending pressure.

Chiropractic is one of the newest forms of healing. The chiropractor also believes that most illness is caused by some structural abnormality, and he traces this back to pressure upon the nervous system at the spine. His treatment consists in manipulating or "adjusting" such vertebrae as he believes are out of alignment. Chiropractic is not officially recognized in all of the states.

The surgeon is a doctor who specializes in performing operations. Most general practitioners perform minor operations, but in serious cases the usual procedure is for the attending physician to call in a surgeon, who advises either for or against an operation and, if necessary, performs it. The surgeon is generally a specialist along one certain line—limiting himself to operations of a definite type. Specialism is a field of great appeal to many, because it limits the types of cases which the physician must handle, and always brings larger financial returns than general practice. The specialist is an expert in some one branch—he may be a nose, ear and throat specialist, a gynecologist or an orthopedist. To be a specialist along any one medical line requires years of study and training in addition to extensive experience of a general nature. The specialist requires a large amount of tact in addition to a large amount of knowledge; often his opinion will differ from that of the doctor who called him into consultation, and he must, without destroying the other man's self-confidence, firmly present his views.

There are numerous opportunities for the physician in public service as well as in private practice. First of all, there is service for the national, state and municipal governments. The army and navy need doctors, the public health departments, public hospitals, charitable institutions, departments of foods and drugs all require the services of medical men. Then there are openings in large corporations—in insurance companies, railroads and industrial and fraternal organizations of all kinds. For the man of studious and experimental nature there is the wide field of medical research. Splendid work is steadily being done along the lines of discovering new methods of preventing and treating disease, by scientific research workers who devote themselves to this field of endeavor.

To be a physician is by no means easy work, and the boy who wishes to become one had best make sure that he will have certain necessary qualifications. The physician must, first of all, have a strong physical constitution. During all the years of preparation for actual practice he will have no regular hours of work and will be subjected to the dangers of infectious and contagious diseases. He will therefore need a robust body, and a certain amount of courage also, to face diseases of all kinds so closely as it will be his daily lot to do.

The prospective doctor must also have a studious nature—the power of intellectual application and concentration. As a student, he will have much to learn and, as a practicing physician, the same will hold true. He must keep abreast of all the medical literature which is published, so as not to fall behind in his knowledge of diseases and their cure. To do this, he must be capable of using the little leisure time he has to the best advantage. The physician must be observant, for this will help him in his diagnosis; he must be resourceful, quick and confident, so that he may not be found lacking in an emergency. He must be diplomatic and tactful, in order to deal successfully with all the various types of people he will have to meet; and, if he has some social experience, it will also be very helpful to him, in his relations with his patients. Above all, he must be honest and morally courageous, so that he will not succumb to the temptations towards unscrupulous acts with which he will occasionally meet, and so that he will inspire in his patients the respect and confidence towards himself which are so necessary in the practice of his profession.

The training of the physician must be a very thorough one. Most of the best medical schools require that entering students shall have had at least two years of college work before beginning their medical studies. The premedical college course should include such subjects as chemistry, physics, biology, English, one or more modern languages, zoology, psychology and mathematics. When the student has completed his studies in the medical school, he is ready to take a state examination, which, if passed, entitles him to a license to practice medicine. It is excellent training for the young doctor to enter a hospital as an interne for a year or two, for thus he will receive an amount of varied experience which will be invaluable to him.

The American Medical Association, Chicago, annually publishes the "American Medical Directory," in which may be found complete classified lists of the medical schools of the country.

The cost of a medical education is rather large—tuition fees, laboratory fees, the additional cost of at least two years of college work make the minimum cost about $3,000 in most cases. It is considered best for the student not to attempt to work while the school is in session, but during the summer vacation he may find employment in various sanatoriums and hospitals, and thus be enabled partially to earn the cost of his education.

When the young physician is ready to open his own office, he will become aware of one of the disadvantages of his profession—its overcrowded state. There are, in many communities, more doctors than are needed, but the young man who looks carefully about him and chooses a neighborhood where competition with other physicians will not be so keen will have a better chance of building a good practice. Another disadvantage of the medical profession is the fact that a physician can have no regular hours of work, but must at all times be ready to respond to a call upon his services. And, furthermore, there is nothing to guarantee him a good or steady income, unless he is employed by a corporation or in a government position, at a fixed salary. Few doctors become rich. Great specialists, of course, receive large fees, but the average practitioner in the city usually does not have an income of more than from $3,000 to $5,000 a year. In the country he may make even less, but living expenses there are lower.

Hard work, the competition of quacks as well as capable doctors, and inadequate compensation will, however, not hinder the man who is a true physician from doing his duty well, nor will they discourage him; for the true doctor loves his work and is happy in the thought of the service he is rendering mankind.

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CHAPTER XXX

THE METAL TRADES

From the mines of our country come the metals which are the foundation of so much of our trade and industry, and upon which our daily comfort depends to such a large extent. The ores which have been extracted from the mines are transformed in furnaces and mills into molten metal, and this is further refined before it becomes of practical use. Then it is formed into bars, beams and rails, and is ready for still further transformation. Some of the rails are used for car and railroad tracks, and some of the beams go to make up the skeletons of huge skyscrapers or other structures. Much of the metal is transformed, by means of machinery, into household utensils and thousands of other objects. All about us are things which are either made of metal, or have been produced with the help of machinery. And many of the objects which heretofore have been made of wood will soon appear in metal form. As the demand for large-scale production continues to increase the demand for machines to accomplish such production is bound to increase also.

It can be seen that metal plays a most important part in our lives. Everyone has occasion to use it in some form or manner. The builder of houses, ships and vehicles of transportation, the manufacturer, the mechanic, the engineer all depend upon metal for their work. The men who make this metal fit for use, and those whose daily work consists of employing it in various ways, form a large and important part of our working population.

Metal is produced from ores, in the blast furnaces, steel works and rolling mills. Many of the men working there are common laborers, but some skilled workers are needed. The blast furnace is a tower-like structure into which the ore is put, and in which it is subjected to intense heat. The molten metal flows to the bottom of the furnace, and from there is drawn off. The "blower" is the man who holds the position of greatest responsibility around the blast furnace. He must see that the proper amounts of material are put into the furnace, that the temperature and pressure of the blast are properly regulated and that the molten metal is withdrawn at the right time and in the right way. His work is, therefore, more a matter of directing operations than of carrying them out himself. The "dumper" directs the flow of the metal into the ladles or sand beds which receive it. The "pig-iron men" attend to the pouring of molten metal into iron molds, which travel by on an endless chain. "Lime men" spray these molds with lime or clay, so that the metal will not stick.

In the steel mills the iron is again subjected to tremendous heat in the Bessemer converter or in open-hearth furnaces, and is thus turned into steel. Usually these furnaces are operated mechanically, and the men who tend them need not have any great amount of technical knowledge. In the rod mills, where the metal is finally converted into bars and rods, the "rollers" need some rather specialized knowledge. They must thoroughly understand mill processes in the handling of steel, must have expert knowledge of the temperature and speed conditions which will give the best results, and of the resistance qualities of metal.

All the work connected with the production of metal is strenuous and hard, and requires on the part of the worker a strong physique. Frequently the hours are long, for blast furnaces and steel mills are operated the full 24 hours of the day. The workers are often exposed to intense heat, and are obliged to handle heavy loads. The work of the blast furnace and steel mill is of the kind that must be learned by experience. There is practically no formal instruction in it. Men who begin as laborers or helpers can rise to higher positions through the experience they gain in their work. Steel mill and blast furnace workers earn, on an average, between $30 and $40 a week.

The foundry is a place in which metal is cast into various shapes. This is done by pouring molten metal into a mold, usually made of sand. To make a mold, it is necessary to have a pattern, which is, ordinarily, a full-sized model or counterpart of the object to be cast. Making the pattern is the work of the pattern maker, often referred to as the aristocrat of the foundry. Pattern-making is really a woodworking trade, as most patterns are made of wood, metal being used only when a large number of castings are required from a single pattern. Pattern-making is being treated here instead of under "Woodworking" because it is an adjunct of a metal-working trade—foundry work. It is a highly skilled occupation, requiring technical knowledge as well as mechanical skill. Besides being able to perform the most complicated woodworking operations, the pattern maker must have a knowledge of foundry work, drafting, shop mathematics and machine-shop practice.

The greater degree of technical knowledge required by the pattern maker makes some training in a technical or trade school desirable. The young man who has had some such instruction may begin work as an apprentice or helper, and after three or four years' experience will earn from about $4 to $7 a day. As good pattern makers are scarce, the young man choosing this occupation will probable not lack employment. The work of the pattern maker is not as laborious as that of other foundry workers, but the pattern maker should, nevertheless, be strong and healthy.

The finished pattern is turned over to the molder. "Molding" is the work of packing damp or specially prepared sand about a pattern in such a way that, when the pattern is removed, a cavity will be left. This cavity, which is the "mold," is then filled with molten metal, which takes the required shape. The molder must see that the sand is of the proper firmness, that the impression left by the pattern is clear-cut and that the metal is properly poured and removed. He must know the various molding sands, be familiar with the action of metals and be physically strong enough to carry out his work, which is often decidedly unpleasant. The molder is obliged to stand in the damp sand all day long, to lift heavy weights and to carry on most of his work without any help from mechanical devices.

The work of the core maker is somewhat similar to that of the molder. The core maker prepares, out of special sand, and with the help of "core boxes," cores which are placed in the molds, and which make cavities extending through the castings. The core maker, like the molder, usually enters upon his work through apprenticeship. His work does not require as much physical strength nor as much skill, as that of the molder. Molders and core makers earn from about $4 to $6.50 a day.

The operations which have been mentioned have all been connected with the production of metal. Now we come to its utilization. Many men are engaged in sheet-metal work. Sheet-metal workers are employed in the building trades, in the ship, automobile and aeroplane construction industries and in the establishments which manufacture metal household utensils and furniture and ventilating and heating systems.

The main duty of the sheet-metal worker is that of cutting shapes out of sheets of metal, such as iron, copper and zinc, bending and forming them, largely by machinery, and of riveting or soldering them together. He also attends to the erecting of the sections he has formed. The sheet-metal worker should know how to work from blue prints, should understand how to draft patterns and should know how to place all required portions on buildings. His work is not very difficult, and is quite well paid, since the average wage is between 45 and 85 cents an hour. His employment may at times be uncertain, since it depends to a great extent upon the general state of the building trades. In a large shop or factory, the danger of encountering long periods of unemployment is, however, usually absent.

The structural iron worker is perhaps the most spectacular of all the men engaged in the metal-working trades. He is the man whose task it is to put together the great steel beams and girders which form the skeletons of high buildings. He raises these huge iron parts into place and rivets them fast together. His work requires a combination of daring and caution, a cool head, steady nerves, and a capacity for quick and sure action. The structural iron worker should be able to read blue prints, and should have some knowledge of the mechanics of building. His work is dangerous, and involves much nervous strain and also physical hardship. Like the sheet-metal worker, his employment is dependent upon the general state of building conditions. As ground continues to rise in value, it is inevitable that the structural iron worker will continue to be in demand, since the high price of real estate means taller buildings. The pay for this type of work is quite satisfactory, being usually about $7 or more, per day.

The work of the machinist is probably the most technical of that of all metal workers. Nowadays, when increased production is so often the goal of manufacturers, the machinist usually carries on one specialized operation. In repair shops and tool rooms, one is more likely to find the all-round mechanic, but the more common type of machinist is expert in one sort of work, chiefly.

The machinist who does "machine work" works on a lathe, planer or other mechanical device, and usually turns out one certain product. The "bench hand" does hand work, such as filing, scraping and chipping, and needs a large amount of skill. The assembler or erector gathers the various parts of the machine which is being constructed, and puts them together properly. He completes the machine and sets it up for actual operation. His work is very responsible and requires great skill and a thorough knowledge of his trade.

The machinist's work is very attractive for the mechanically inclined man, who likes to work with machines and metals, and to feel that, through his work, important aids to progress are produced. In addition to mechanical skill, the machinist must have a knowledge of shop mathematics, and know how to read blue prints. There is at present practically no danger in the machinist's work, since machines are practically always provided with safety devices; but, of course, care must be exercised in handling them. The machinist has a particularly good chance for advancement, since he is a skilled worker, and since the field for his work is a very extensive one, which promises to continue growing. The capable machinist with some business ability frequently goes into business for himself. Work in one's own shop is usually more varied than that assigned to one in a large shop or factory. Besides this, it is, for the man of business sense, more profitable. The usual wages of a machinist employed in a shop are from about $4 to $7 a day, with possibly more, if he is paid on a piecework basis.

The machinist, more probably than any other metal worker, has need of some preparatory training. Not many schools give instruction in the other metal trades, but practically every trade and technical school offers some courses in preparation for the work which the machinist will be called upon to do. Many of these schools offer both day and evening courses, and in most cases no tuition fee is charged. It would be impossible to give here a list of schools at which one might be trained for the metal-working trades, but application to the local Board of Education will bring the desired information.

The work of the metal trades is difficult and arduous, but it is work of essential importance. The country's great dependence upon the products which the metal workers turn out, and upon their other accomplishments is very evident. Upon them is founded much of our prosperity; and their toil makes possible many of the wonders for which the present age is praised.

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CHAPTER XXXI

MILITARY SERVICE

Though the World War is over, the military service of our country is still prominent, and suggests itself to many young men as a possible career. The army and navy have at all times occupied positions of much importance in the existence of nations; and, as long as our nationalistic tendencies continue, these two prime factors in the satisfying of such tendencies promise to retain their importance. The army and navy have a double function—they fulfil their purpose of protection of the country's interests through the means of attack and of defense. In days long gone by, when civilization had hardly begun, every man was a warrior, ready to attack the members of neighboring tribes, if such a course promised advantage, and equally prepared to wield his arms in defense of himself and his kinsmen. With the growth and development of the social unit, a special body of young and able-bodied men, led by older men of more experience, came to be the instrument of attack and defense, although in times of acute need all men capable of bearing arms did so. And that is still much the system upon which the military service of many countries is based. In the United States, military service is purely voluntary, except at times of extreme need, such as the last great war, when it was necessary to resort to measures such as the selective draft.

The army and the navy considered as a career make their chief appeal to the patriotism of the individual. But there are other factors which influence young men to choose the military calling. The life of a soldier suggests not only service for one's country, but also gives promise of a life of adventure and rich experience. In other words, military life makes a strong appeal to the spirited, imaginative type of youth. It seems to combine, probably to a greater extent than any other vocation, a somewhat spectacular mode of life, and yet honorable and useful service, inspired by high ideals.

The military organization of today is more complex than it has ever been before. The three great units which compose it are the army, the navy and the air service. In the army, the chief divisions are the infantry, the cavalry, the field artillery, the coast artillery, the engineers, the signal corps and the non-combatant sections, such as the hospital corps, quartermaster corps and ordnance department.

In time of war the men in these various divisions carry on the special operations of attack or defense peculiar to their divisions, but in time of peace their whole time is taken up with routine duties which will fit them for active duty when it becomes necessary. The infantry is the backbone of every army, and contains by far the largest number of men. Infantry are foot soldiers, and in time of war they are assigned to practically every sort of military duty. The cavalrymen are the mounted soldiers; the field artillerymen are mounted soldiers in charge of field guns, or light cannon; the artillerymen are in charge of the heavy artillery; and the coast artillerymen are detailed to protect the seacoast and harbors. The engineers do work of a technical nature, surveying and mapping specified regions, laying out, constructing and repairing fortifications, military roads, bridges and camps. The signal corps, too, requires men of technical training for the work of installing and operating telephone, telegraph and radio systems.

The everyday routine duties of all soldiers are quite similar, although the special divisions emphasize their own peculiar work in the daily peace-time practice. Garrison training includes athletics, both indoor and outdoor, practice in the use of rifle, bayonet, sword, hand grenades and other weapons, in signaling, riding, marching and pitching and breaking camp. The daily work is carried on in accordance with a very definite schedule. Every man in the army, from rawest recruit to highest commander, lives according to prescribed rules. This is part of the great distinguishing characteristic of the military service—discipline. During war time discipline is not relaxed, but of course the daily duties of the soldier are different then, and depend upon many factors which it is impossible to predict.

There are two ways of entering the army in time of peace—one through enlistment as a private, the other through appointment to the Military Academy at West Point and subsequent graduation and appointment as a second lieutenant. In order to enlist, a man must be between the ages of 18 and

35, a citizen of the United States, and must pass a physical examination. When he has been accepted as a recruit he is sent to the recruiting depot. There he stays for about 45 days, receiving instruction in all sorts of matters pertaining to military service. Then, his period of preliminary training over, the enlisted man is assigned to his regiment. Here he has opportunity, by strict adherence to discipline and a display of soldierly qualities, to win promotion, first to an appointment as a noncommissioned officer (corporal and sergeant), and later, perhaps, to a lieutenancy or higher rank.

Every year a certain number of young men are appointed to the Military Academy at West Point. The candidates are required to take a rather severe competitive examination in English, history, civics, arithmetic, algebra and geometry, and also to pass a physical examination. The successful candidates are appointed to the Academy, and receive from the government an annual allowance during the period of their studies. The graduates of the Military Academy are appointed to positions as second lieutenants and, if they have the qualities of a good officer, may look forward to promotion to the highest ranks.

Discipline is, as has been said, characteristic of all military service. It is vitally necessary, for without it the army would be not one unified whole working towards a common end but would consist of independent and, consequently, for military purposes, inefficient groups of men. In order to yield to discipline, the soldier must be patriotic, loyal and obedient. He should be sufficiently intelligent to realize that he obeys not the personal order of the officer who gives a command but the authority behind that officer. The good soldier is courteous and obeys not only quickly but cheerfully as well. He is respectful to his officers and shows consideration for his comrades. He is self-confident and ambitious, with a sense of duty and of responsibility. If he is courteous by nature, so much the better, but it is a fact that many men of special bravery have made extremely good soldiers because of their willingness to follow implicitly the directions of their leaders. Daring is another desirable quality, but with it must go a certain amount of caution, for the careless soldier is a source of danger to his comrades. One of the most important things with which the soldier should be endowed is good health. A strong, healthy body is necessary, for life in the army is not easy, especially in time of war.

The officer should have all the qualities of the good soldier, and some others besides. He should be fair and just, treating his men without partiality, and should be able to inspire them with confidence in his leadership. A good officer will be a man who, while treating his soldiers impersonally, will yet have a sympathetic interest in them, and never attempt to drive them, but lead them by his example.

Soldiers are not highly paid. Even the highest officers rarely have salaries of more than a few thousand dollars a year, and privates begin with about $33 a month. The life during time of peace is not very hard, and offers plenty of opportunity for amusement, recreation and study; during war, of course, the soldier faces hardships and dangers of many sorts. However, it is a sort of life which appeals strongly to many men. There is a certain amount of variety and adventure in it, an opportunity to see lands and people which one might otherwise never come upon, and to gain many interesting experiences. The pay and employment are steady, and one has the privilege of retirement on a pension after thirty years of service. And, above all, there is the great opportunity to serve one's country.

A career in the navy offers much the same opportunities and advantages as one in the army, and requires also much the same qualities in the seaman as in the soldier. The navy, as does the army, seeks in its men the innate characteristics of a high sense of duty and of responsibility, loyalty, trustworthiness and a proper sense of subordination.

The men in the navy are divided into seamen, artificers, engineers and yeomen. The seamen are the real sailormen, handling the ship and fighting in time of need. The artificers are carpenters, plumbers, painters, shipwrights and other such workers who keep the ship and its fittings in repair; and a large number of machinists who are employed particularly on submarines. The engineers attend to boilers, electric installations and engines. Yeomen are non-combatants—petty officers doing clerical work in the various departments on board ship.

The sailor may enter the navy as an enlisted recruit, or as an ensign graduated from the Naval Academy at Annapolis. Every recruit is, upon enlistment, sent to a training station. Men who enter the navy with some knowledge of a trade are usually detailed to one of the technical schools, where they are given further training in that trade, to enable them to practice it with special reference to the needs of the naval service. It is not difficult for the conscientious and ambitious seaman to win promotion.

The Marine Corps is really a separate part of the military organization of our country. The marine is a sort of combination of soldier and sailor. When it is necessary that a naval expedition land on foreign soil, this work is undertaken by the marines, who are trained in the duties of both the sailor and the soldier.

The sailor's life is, in some respects, easier than that of the soldier, but, in general, the two principal branches of the military service may be considered almost equal, as far as advantages and disadvantages go. The sailor, too, is assured of steady employment and continuous, though moderate, pay, of a pension in his old age and of opportunity to educate himself and broaden his outlook through travel and varied experience.

The newest branch of the military service is the aircraft service. This has till now been regarded chiefly as an auxiliary to the army, navy and marine corps, but its increasing importance entitles it to independent consideration. Airplanes are used for observation and attack, and are usually manned by at least two men—the pilot and the observer. The military pilot attends to the actual handling of the plane on flight expeditions, and must know his machine thoroughly and have considerable understanding of military affairs. The military pilot is usually drawn from the ranks of the army, sent to one of the government aviation schools, given training in flying and military tactics and then assigned to a special squadron.

The observer's work is just as strenuous as that of the pilot. He is the man upon whom depends the success of all reconnoitering expeditions in time of war. He must observe the movements of the enemy as well as those of his own country's troops, take aerial photographs, make aerial maps, report minutely and accurately upon whatever he is sent to observe, operate the wireless and radio apparatus with which the plane is equipped and operate also the weapons of attack and defense which he may be called upon to handle in the course of his work. He needs, of course, a very thorough knowledge of military tactics and of various technical matters, in order to carry out his work. Observers are trained in the government observation schools.

Both pilot and observer must be strong men of sound nerves, for their work is exceedingly strenuous. They must have a great amount of courage, initiative and independence, for up in the air they cannot, like the soldier or sailor, depend upon an officer for instructions as to how they shall proceed. Military aviators must be persistent also, for, when they are told to accomplish a thing, it is expected that, like all soldiers, they will do so, if possible. Coolness, caution and self-confidence are further necessary qualifications.

Men of particular promise and intelligence in the pilots' schools may be sent to the Field Officers' School, where they receive special instruction and training in all branches of aviation and in the war-time utilization of aircraft. The military aviator is somewhat better paid than the soldier or seaman. His work is perhaps slightly more hazardous than theirs, for it entails, besides the dangers which they are likely to encounter, the additional perils resulting from our limited knowledge of the air. The appeal which flying makes to the imagination is, however, a very strong one. There is no doubt that it offers more attractions to the man of adventurous and independent spirit than does service in the army and navy proper.

The boy who enters upon the military service as a career, or who simply passes through a limited period of enlistment and then returns to civil life, gains much of value from this experience. He learns to mingle with other men in unselfish comradeship, he learns the virtues of self-restraint and the advantages of teamwork, and his love for his country is no doubt strengthened by the very fact that he has been so directly in its service.

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CHAPTER XXXII

THE MINISTRY

The church is a well-recognized factor in the development of civilization, and its task is not only to spread the gospel to all the world, but to lay a firm foundation of faith upon which man may build the structure of his personality. Whatever the daily activity, the urge to do well comes from the spiritual side of man, which the church stands ever ready to help and strengthen. The moral and spiritual leaders of the church have made the highest contributions to progress, both individual and national; they have helped man over the hard places of life by their faith and understanding; they have proclaimed God's love for man; they have helped the cause of education; they have made charity and benevolence an integral part of man's existence; and they have stood unafraid in every crisis. The minister deals with man, the highest creation of God, and is trained to look for his help both to the Creator and to man. In doing so he helps to bring man into a worthy response to the divine friendship.

The church offers opportunity for a man to spend his entire life in helping others, for service is the watchword of the minister. A devout temperament, which makes religion a part of him, strength of character combined with idealism and an enthusiastic desire for service to others, which makes the work he accomplishes its own reward, are the essential qualities of the minister. Whatever his creed, the minister must not only lead a good and honorable life himself, but must have a genuine desire to help others do the same. He must be consecrated to his faith, and have a capacity for sacrificing himself, where necessary, for the advancement of mankind.

The minister, who is the spiritual leader of his church, whether in city or country, must be able to preach sermons that will inspire, enlighten and benefit his congregation; he must visit his parishioners, and be prepared to help them in their joys and sorrows; he must have some business ability, too, for he may be called upon to raise money for many worthy purposes; and he must know how to serve God by serving man. The minister of today engages in every sort of activity that may improve the conditions of his community; he is a sound, all-round man with a capacity for leadership in religious and philanthropic work. There is plenty of room also for the good old-fashioned minister who is content to preach the gospel and exemplify its teachings in his own life, and leave secular activities to others. Such a man lives his ideals, and his life is his best sermon.

An important phase of the minister's profession is the foreign missionary work. The missionary is really an explorer, for he is always going into fields untouched by civilization; and his civilizing and Christianizing influence work hand in hand. He must have a profound belief in the worth of his cause, and a strong love for humanity. His ability to preach is secondary; his ability to live and teach the love of God is absolutely necessary. There are no limits to the demands for service made of the missionary, and men of the type of Livingston and Borrow have made a record for physical courage and hardihood that equals their accomplishments as religious teachers.

Men of clerical type, who do not want to preach, but who nevertheless feel that their work should be in the line of service for humanity, may go into Y.M.C.A., Boy Scout or social service work. A special training in social problems, a knowledge of society, government and industry, and a strong love of service are necessary requirements for this type of work. In almost every community may be found special schools where courses in social service are given. The minister who becomes a social service worker is really a missionary with the additional burdens of civic cares thrown in. He must be somewhat of a reformer, idealistic, yet practical, to do efficient work. Men of administrative ability may find a post of usefulness in the church as workers in some one of its many social activities, for the church of today is so large and so well organized as to need the services of such men. There is also need in the church for scholars who have literary ability and are strong in the knowledge of history and humanity. Such men may become theological teachers or writers of theological works.

It is desirable for every minister to have a college education before taking up his professional work at a theological seminary. Many schools of theology require college graduation or its equivalent for admission. While studying at the theological school, the prospective minister will gain practical experience by serving a little parish or mission, or by assisting a minister. In his devotion to study the would-be minister must not forget that he must be an all-round man. Many a minister of today has been a college athlete and, because of his joy in sports, has a strong bond with the young people of his congregation. He must develop his social abilities, for he will have to meet his congregation on a social as well as on a professional basis.

The school which the prospective minister attends will depend upon his religious affiliations. The average theological school has from a three- to four-year course, and it is possible to combine one or more of these years with regular collegiate work. All of the great denominations are willing to help liberally in training students who show capacity for ministerial work. The tuition and living charges are kept very low, and the church will also extend financial aid. But the years of education and training involve great expense in spite of low fees, and the students who serve as assistant pastors or Y. M. C. A. workers in their spare time are enabled to earn some of the money needed to defray their expenses.

The ministry offers the poorest pay of any of the professions, and yet ministers are the happiest in their work, for, more so than in any other profession, the minister's work is its own best reward. Practically all churches have pension funds for their ministers, for few ministers earn enough to provide for their old age. Salaries are growing better, fortunately, but, even so, the best compensation for a ministry faithfully served is in the consciousness of advancing God's kingdom. Hardly a dozen men surpass $10,000 a year, and it is an unusual preacher who goes beyond the $5,000 mark. The minister of a city church may average $3,000 to $6,000 or, if his work is in the country, he may receive $1,200 to $1,500, while hundreds of ministers are never paid more than $500 or $600 a year. Missionaries receive about $800 to $1,500 a year, but very often are given what is called "support"—that is, just enough money to live on, in whatever country they may be. The man who enters social service fields will receive a salary ranging from a bare living to about $4,000 a year and the minister who becomes a teacher will seldom receive more than $4,000 a year.

It has been estimated that great preachers sacrifice from a half to nine-tenths of their potential earnings in other callings when they become ministers, for after five to ten years of preparation they receive no more than if they sold goods or learned a trade. Yet the non-material rewards are great. The minister has a chance for creative expression in his sermon and he is also the intimate counselor and guide of his congregation. He shares their great experiences, is their teacher and has a marvelous opportunity for service of every kind.

The man who would become a minister must have a capacity for leadership as well as a genuine love for people. The modern clergyman is practical, has good common sense and is a great deal of a man. A wholesome personality and physical health and well-being are essentials; and a pleasant smile and a sense of humor will carry the minister quite as far as will his ability to preach. He must have a devout temperament, strength of character, genuine social sense and an ability to adjust himself to conditions. A good voice will help the minister as much as careful study in making his sermon worth while, and unselfishness is as necessary to his success as are years of study. His religion should be greater than a denominational one; it should embrace a love for all mankind, and only in so far as his character is worthy of such a creed can he accomplish the most in his work.

The theological profession is not an overcrowded one, but it is an underpaid one. Moreover, all too often the minister becomes a bird of passage with no settled home, for some churches change their pastors every few years. His time is at the disposal of everyone in his church and the influential people of the church often try to impose a censorship upon him that makes his position an extremely trying one. However, the real minister will know how to overcome every obstacle in his work for humanity. It is in this chance for service for others that the man who wants to advance God's kingdom finds his greatest joy. He has the delight of watching and helping the young people of his parish form their characters; and his opportunity to work for others makes his life a happy and interesting one. He can bring into the community, through the medium of his own home, refinement and culture; and the joy of service, to the man with the true qualities of a minister, overbalances the disadvantages of his profession.

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American Missionary, Six Congregational Homeland Missionary Societies, (Congregational), New York.

Christian Advocate, Methodist Book Concern (Methodist), New York.

Christian Herald, Christian Herald Publishing Co. (Interdenominational), New York.

Christian Index, Georgia Baptist Convention (Baptist), Atlanta, Ga.

Christian Observer, Converse & Co. (Presbyterian), Louisville, Ky.

Churchman, Churchman Co. (Episcopal), New York.

Hebrew Standard (Jewish), New York.

Messenger of the Sacred Heart (Catholic), New York.

CHAPTER XXXIII

MUSIC

Music is the international language which, irrespective of race differences, unites all nations. It appeals alike to the educated and uneducated and its scope is only appreciated when not only the musician but also the great audiences which gather to listen are considered. It is one of the oldest arts—but also one that is ever new—and it penetrates deeply into the complexities of modern emotional life, taking a firm hold on the human heart. The awakening of musical appreciation in an individual or in a nation not only aids in general culture but it betters social conditions. The folk music, which is an integral part of the life of most countries, unites and holds the people as no other bonds can. The power of music over man was especially demonstrated in the late war, for the men literally went to battle with songs on their lips. The melody and rhythm of the songs gave them courage and made them better soldiers. So music is not only an art of enjoyment; it is an art that helps the individual, whether he be musician or listener, and is a constant power in the molding both of the individual and of society.

Music is composed of melody, harmony and rhythm and, as an art, it means the organization of musical sounds into something definite, by design, and not by chance. All musicians must have a keen mental perception of tone, time and emphasis, and must have the ability to give to the listener the emotional impulse contained in the theme and to bring out the melody—thus realizing the composer's intention.

The musician has a choice in the instruments he may use, and the field of work which he may enter is concerned with this choice. Music may be given expression through the human voice or through the use of musical instruments. The man who has a good voice and has the desire to sing should, by all means, use his voice rather than an instrument. He may have a tenor or a baritone voice—that is something which is predetermined for him—but the line of work which he will enter is a matter of choice. If his voice is an exceptional one, he may go into concert work or become an opera singer.

The man who does concert work provides an evening's entertainment either alone or with an assisting musician and, in order to sustain the interest of the audience for several hours, must be an artist of a high type.

The opera singer has the severest sort of competition with the best singers, not only of America but of foreign countries as well, for the opera represents the musical life of such countries as Italy, France and Germany. The opera singer must not only be a musician, but, if he wishes to succeed, must also be an actor. The parts which he has assigned to him will depend upon the compass of his voice, his ability and upon the opera being sung. If he knows several foreign languages, he will have a better opportunity to become a member of an opera company, such as the Metropolitan Grand Opera Company or the Chicago Grand Opera Company. He may find an opportunity to sing with the chorus of the opera company, and then his rise will depend upon his native ability and his efforts. The singer must always study, for the opera field is a hard school, demanding always the exceptional man. Comic opera and musical comedy also offer opportunity for the singer who can act.

Aside from the concert and opera, the singer may appear alone or become a member of a small company that sings on the vaudeville stage. Such work demands acting as well as singing. The Chautauqua and Lyceum courses offer much the same field. The singer may also become a teacher, if he has a firm grounding in the technique of singing and the ability and patience to help others to acquire that same technique. There is a growing field for musicians to take charge of the entire musical program of schools, including concerts, chapel services, glee clubs and orchestras. In church work the choirmaster is really a teacher and a sound training is more to his advantage than real genius, and a knowledge of the qualities of voice is essential. The soloist in a church choir has permanent work that can well be combined with teaching.

The musician who uses a musical instrument has a wide field to choose from. The best instrumental musicians have some knowledge of the piano, whatever their later work may be. The man who becomes a pianist must have great mental and muscular coordination, he must have keen mental perception and he must also have the artistic ability to interpret the theme of whatever is being played. The pianist has his best opportunity in concert work or teaching. If he has exceptional powers he may enjoy the concert work, while if he is not able to do that he may play in an orchestra. While the church is the traditional place for the organist, few motion picture houses lack a pipe organ, and the organist who can play well and who can adapt his music to the pictures can fill such a position. Different instruments require different talent but, whatever instrument the musician uses, he must express his utmost feeling with it. Regular practice is an essential for the musician, and with it must come stated hours for exercise and rest. Music is an art that demands constant application, and the true musician can never relax his efforts.

The orchestra offers work to a multitude of musicians. The man who plays a cornet, violin or drum has open to him many places with orchestras. The better motion picture houses have orchestras, often of sixty or seventy pieces, that demand trained artists; and the man who has a clear sense of rhythm and time can find a position in this line of work. The conductor of the orchestra is its responsible head, and its success and reputation depend largely upon him. He must know the score, and bring out the melody and harmony with the baton as a symbol of his power. It devolves upon him to make the orchestra a unified whole, so the position is a responsible one and one that offers great advantages to the man who may start by playing in the orchestra, but who becomes capable, both by his personality and musical knowledge, of conducting it.

The teaching of music offers many advantages to the musician, for the field is ever widening. The love of music is so ingrained in us that an ever-growing number of children are given at least a few terms of lessons in music. This may result in only a deeper musical appreciation, but the teacher will find it worth while, even on that score. Teachers, whether of piano, violin, pipe organ or orchestral instruments, must have a thorough training in order to be successful. The teacher, concert singer or director may become a composer and, to become a composer, one must have an unusually fine sensibility to tone qualities, pitch, rhythm, harmonics and idealization of musical themes.

There is a growing demand for better trained musicians, and the training which is advocated should be coupled with a liberal education. It involves rigid mental discipline, and must have an intellectual background, a thorough knowledge of English, at least one modern language, preferably French or Italian, general history and some science. The musician must be capable from a musical standpoint, but he must also be broad in his interests and well grounded in his ideals. He must learn the language of music but he must have something with which to express that knowledge, and only persistent culture along broad lines will fit him for the task. He must study with a definite plan, schedule and under favorable conditions, if he is to become a good artist. He must have a thorough training in harmony, musical history, ear training, form, counterpoint, theory and composition besides his special work on whatever instrument he chooses. Mere talent will not carry him along, for a profitable understanding of the works he interprets cannot be gained from mere casual hearing but must come as a result of training in habits of observation, of analysis and of sympathy such as only systematic study can give. Physical training, with especial reference to breathing, is absolutely necessary.

When the student has graduated from a music school, he must continue his studies, if he desires to do concert or operatic work. This advanced work is usually done under competent private instruction in one of the large cities either in this country or abroad. At present, teachers in New York City are able to supply practically any want, and American teaching is proving very successful for the student who wants to work in this country. A year abroad, however, improves the diction, gives one a wider knowledge and is exceedingly valuable.

A great many musicians never attend a musical college and depend wholly upon private instruction. If the student has already acquired his grounding in English, languages, history and science, this is a very excellent method, but such instruction should be supplemented by attendance at lectures and programs, for all musical students need contact with the musical world in its length and breadth.

A musical training is exceedingly expensive, as tuition alone in the usual music schools amounts to from $350 to $1,000 a year. The four years in the average school can hardly be accomplished for less than $4,000 and the amount usually needed is much greater. Even in the state institutions there are fees in the music departments, although they are noticeably lower than those of the private schools of music. Private lessons usually range from $2 to $10 a half hour and some of the best recognized teachers charge even more. The training period for a musical career is from six to ten years and, even after this study, the practice and lessons must be continued indefinitely. It is a profession for the man who has the ability and the financial means to pursue it. It demands such perfect physical well-being that it is essential for the student to work without financial worry. The man, however, who is unable to accomplish this, yet knows he is capable of becoming a good musician, can perhaps find an opening to play or sing while he is studying—such openings may be had in church choirs, student orchestras, choruses and the like.

Professional incomes have no standard. The musician is a musician not for what he can make out of his work but for what he can put into it. Only a few professional musicians are able to demand financial returns in any way commensurate with their ability and effort. So many who study music use it as an avocation that it has hurt the earning ability of the professional. Caruso could demand his price, but only after his ability had been proved, and there are many musicians now who make $20,000 to $100,000 a year. But these are in an exceedingly small minority. Orchestral positions pay from $200 to $1,000 a month and a competent director will receive an even higher salary. The musician who is in light opera or on the vaudeville stage usually works by the season and the length of the season may vary from twenty to thirty weeks. The salaries are from $100 a week upwards, depending upon the artist. The income of concert musicians depends upon their popularity and the number of concerts given, but the low mark for such work is about $200 a concert. Teachers in schools and colleges receive salaries ranging from $1,000 to $3,000 a year. Private teachers average from $2 to as high as $25 a half hour, so a great many musicians have turned to teaching not only from love of the work but also for monetary reasons.

The man who would be a musician must have an artistic temperament and the taste and genius for the work. He must have an auditory memory, for this musical memory is absolutely essential to his success. He needs a good physique, for the work is hard and the hours often long and tiresome; if he is a singer he must have good breath control for unless his vocal organs are in good condition the singer cannot do justice to his art. A good appearance on the platform or stage is especially necessary for the concert or opera singer. Sincerity and personality have been given by a great many musicians as the secret of all success; certainly they help a great deal. Happiness and cheerfulness, the ability to overcome despair, patience and a willingness not only to sacrifice pleasure for the sake of his music but to work steadily for long hours are all desirable qualities of the student musician. The true artist always has the joy of his art, which is his real reward; but all too often this reward is the only one.

The career of a musician demands long, arduous and expensive training, and a man may spend years on his work only to discover that elaborate technique has nothing behind it or that, even with real talent, he falls short of the level which brings success. But the prizes are great if he does win, for, if he is a concert or opera singer, a violinist or conductor of an orchestra, he is idolized by the public, he sees much of the world and has a good income. Most of the hundred thousand musicians in this country are not opera stars but, even so, music offers a real career to the man with talent for both music and work.

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CHAPTER XXXIV

OPTOMETRY

Almost everyone reads nowadays, not only because almost everyone knows how to read and because books and newspapers and periodicals are turned out in such quantities, but also because the artificial light afforded by electricity gives to many people added hours and opportunities for reading. The number of people who read, write, sew, typewrite, draw, do fine, close work or otherwise use and abuse their eyes grows yearly. The spread of education also compels an increasing number of people to use their eyes for reading, oftentimes excessively.

In the old days, when comparatively few people went to school, when sewing and other work were not of a kind to require excessive straining of the eyesight, when typewriting and stenography were still unknown, when motion pictures had not yet been thought of, when reading matter did not so completely flood the world as it does today, when people spent their lives mainly in the healthful, open-air occupations of the country—even in those days, eye troubles and remedies for them were not unknown.

Lenses to help failing vision are an ancient invention; but it is only within recent years that the business of equipping people with the lenses which will most accurately remedy optical defects has become a matter of scientific study and practice. No longer do people enter a shop and themselves select a pair of eyeglasses which seem to improve their vision. Most people go first to an oculist, who is a regular physician specializing in the treatment of the eyes, who, after careful examination prescribes the lenses which will most exactly meet the patient's needs. These glasses are then supplied by the optician, or optometrist, in the shape that will be most effective and comfortable.

Whereas the oculist examines and treats eyes with the aid of drugs, medicines and surgical operations, the optometrist is forbidden by law to make use of any of these methods, and must limit himself to measuring the eyesight, and fitting glasses to the eyes, by mechanical means alone.

The optician must know how to measure the eyesight by all the means permitted him. Even in cases where an oculist has not first been consulted by a customer, he should be able to make up the proper glasses, provided the eyes do not need medical attention. The measuring of vision and the fitting of glasses require, on the optometrist's part, a general knowledge of the fundamentals of optical science. The actual preparation of the glasses, and their proper placing before the eyes, require mechanical skill of a high order.

It is true that the perfect grinding of lenses is not now as difficult as it used to be. Already prepared optical glass can now be obtained in large quantities, and much of the work of grinding can be done with the help of machinery. Nevertheless, a considerable amount of skill is necessary for the detection of flaws in glass, its accurate grinding, and the handling of the materials of which lenses, prisms and mountings are made.

The optometrist must not only prepare the proper lenses, but he must mount them in frames which will be most suitable. Then he will have to place the glasses before the eyes in such a way that they will fit comfortably and at the same time render the most efficient service.

In order to do his work well, the optometrist must have certain definite qualifications. He should, in the first place, be painstakingly accurate in whatever work he undertakes. A glass that only approximates the one prescribed may do a great deal of harm to its wearer, and it certainly cannot do much good. Only the perfect lens gives the right results, and so only the person capable of turning out perfect work should undertake the practice of optometry. A certain amount of manual dexterity, of mechanical ability, is a great asset to the optometrist, since much of his work calls for that quality.

Most young men who enter upon the profession of optometry look forward to having a business of their own some day. Business ability is necessary for one to conduct an optician's office successfully. And the ordinary virtues of honesty and industry are, of course, as essential for this type of business as for any other.

The practice of optometry is controlled by law in practically every state. The regulations which govern the issuing of licenses to optometrists differ in the various states. In most cases there are definite educational and professional requirements, and provisions for the examining of candidates by the State Board of Optometry. A resumé of the laws of all the states in regard to optometry may be found in "Higher Education; Optometry: Laws, Rules and Information," *The University of the State of New York, Handbook 28,* June, 1920.

Most of the laws require that an applicant for an optometrist's license be at least twenty-one years of age. The educational requirements vary. Usually at least two years of high school education are considered necessary, and in some cases a full four-year high school course is required. Some states require that the prospective optometrist shall be a graduate of a recognized school of optometry which comes up to the standard set by the state board. In some cases, from two to four years' practice with a registered optometrist may be substituted for the school course in optical science. In other cases, both graduation and practical experience in the office of an optometrist are required.

Those applicants for the license who possess all the preliminary requirements prescribed by the law are examined by the State Board of Optometry and, if they pass the examinations, are granted a certificate to practice optometry. The examinations for the certificate usually include questions in the anatomy and physiology of the eye, in physiologic and practical optics and in theoretic and practical optometry.

A statement of the exact legislation of any state to govern the practice of optometry may be obtained from the State Board of Optometry at the capital of each state, which will also recommend schools where the profession may be studied.

While studying with a registered optometrist, the student undergoes a sort of apprenticeship. He usually receives small compensation, but the experience and practical knowledge he gains at this time are far more important than the slight compensation he receives.

Later, when he has his license, he usually enters the employ of an established optometrist. His work may be confined to the measuring of customers' eyes, or he may be engaged in preparing the glasses. If he works in a very small office, he may have to take care of the selling, measuring, preparing and fitting of glasses. In a larger place, however, the work is usually rather specialized.

Most young men are not content to spend their lives simply as salaried employees, in which capacity they earn from $35 to $50 a week up. Usually, they save some of their earnings and later open offices of their own. Here they will have to combine professional and business duties. The earnings of independently established optometrists are determined by the sort of service they render, by the community in which they are located, by their business ability and by all the numerous factors influencing every business venture.

Optometry is, after all, a comparatively new profession and, as such, it offers excellent opportunities for the capable and energetic young man. He must realize that there are certain boundaries which he must not overstep—that he must never allow his enthusiasm for his work to lead him into attempting medical treatment of eye defects. If he does make such attempts he will meet the resistance of the law, and will gain the enmity and active antagonism of the medical profession. If, on the other hand, he confines his practice within the limits legally established, he can easily become a force in his community. His work is an important factor in the general struggle to attain and keep health. If he does it well, he can gain the confidence and respect of the medical profession as well as of his customers.

The fact that optometry is a lucrative and not overcrowded profession is attracting a considerable number of young men to it. And the fact that its practice is, in most cases, so closely regulated means that a higher type of optometrist is coming into the field. He is better educated than his predecessors—he knows more about the relation of eye health to general health, more about the business and professional ends of his work than did the optometrist of even a few years ago.

Besides his opportunity to render beneficial service in his own particular community, he may have the opportunity to serve his government. The men comprising the State Board of Optometry are chosen from among practicing opticians of good character and reputation, and of high professional standing. When they take up their public office they must consider not only the advantage of their fellow optometrists, but also—and this is the more important thing—the well-being of the people. Laws must be made to protect the public and also the legitimately practicing optometrists. Examinations which test the true knowledge of the applicants for the license must be formulated. The prime qualifications of the optometrist on the state board are a knowledge of his profession, an intelligent appreciation of its importance and a sincere desire to foster the well-being of the community.

Every efficient optometrist, even though he may not serve in an official capacity, does his share towards improving the general health and comfort. He should regard his work not only from the standpoint of personal gain but, more important by far, as a ministering to one of the most urgent needs of his fellow-men.

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CHAPTER XXXV

PHARMACY

From earliest days, man has looked to Nature to supply him with the means of curing his ailments. The curative and healing properties of certain plants, roots, herbs and barks were discovered long ago, and these were made into crude potions and brews, and thus utilized in cases of illness. Since those days, the compounding of medicinal products has developed to a remarkable degree. Patient scientific research in the laboratory has replaced the guesswork of former times, and has resulted in the discovery of medicinal properties in many plant products, of curative qualities in animal serums and of methods of producing synthetically numerous curative agents. The medical preparations of today are also dispensed with a much greater degree of skill than ever before; they are more refined and palatable, and also more accurately compounded than formerly.

The doctor prescribing medicines for his patients could not possibly find the time to put these medicines together himself. This work is left to the prescription pharmacist in the pharmacy or "drug store." Upon receiving the physician's prescription, the pharmacist scrupulously follows it, producing the required preparation. Most pharmacists also dispense certain preparations, such as healing lotions and ointments, and remedies for minor ills, according to their own formulas.

Certain natural qualifications of the utmost importance must be possessed by everyone who wishes to practice pharmacy. One of the first and most necessary of these is accuracy. The pharmacist's work entails the greatest responsibility. He deals constantly with dangerous drugs and powerful poisons. The least carelessness, the slightest mistake, is liable to have fatal results. The man who cannot follow directions exactly has no right to enter upon the practice of pharmacy.

Cleanliness is another prime requisite. Unsanitary conditions in the prescription room refute the entire work of the pharmacist.

The drugs used must be absolutely pure, the implements employed in compounding them must be kept sterile and the pharmacist should be as scrupulously clean as the doctor.

The pharmacist must also be a man of good character and strong will. He handles strong narcotics and liquors in his daily work, and must be able to withstand whatever temptation these products may offer him.

Nowadays the typical drug store is not simply a pharmacy, devoted to the compounding and dispensing of drugs and medicines, but in most cases a general store on a small scale. All sorts of goods are carried in stock and, in order to make his business a successful one, the druggist must have not a little business acumen and must possess the qualities of a good salesman.

In order to study to become a pharmacist, a boy should be a high school graduate, although less than four years high school work may be accepted by some pharmacy schools. Courses in schools of pharmacy usually take from two to four years, and vary in cost from nothing (at state universities) to about $200 a year. In many schools both day and evening courses are given. The graduate of a college of pharmacy is required to pass an examination given by the State Board of Pharmacy, before he receives his license to practice. In some cases, a certain period of practical apprenticeship in a drug store is required before the pharmacist's license is granted.

The instruction in schools of pharmacy includes such subjects as chemistry, botany, materia medica and pharmacy, and allied subjects like microscopy, analysis of foods, medicines, secretions and excretions of the human system, and bacteriology. A large amount of laboratory work is usually provided. More specific information as to courses, entrance requirements and fees may be obtained by writing to the schools.

Usually the student at a school of pharmacy spends some of his spare time or vacation periods working as a clerk in a drug store. Such work gives him practical experience in the business as well as the professional side of his vocation. He becomes acquainted with some of the problems facing the proprietor of a drug store, and gains a certain foundation of business knowledge which will stand him in good stead when he is ready to go into business for himself. The student-clerk is seldom paid more than $15 a week, but he gains much valuable experience from his work.

Few young men have sufficient capital to become the owners of drug stores immediately upon being licensed as pharmacists. They therefore enter the employ of an established druggist as clerk or assistant, and in this position make from about $100 a month up. In the course of a number of years most young druggists have accumulated enough money to buy either a partnership in the store in which they have been working, or a business of their own. It is impossible to say what financial returns may be expected from a drug store. The location of the store, the quality of the service rendered, the reputation of the pharmacist among physicians and other people, the business ability of the druggist are all-important factors in determining the income which the drug store will yield.

The work of the druggist is not particularly difficult, but it is confining, and the hours are, in many cases, long. The pharmacist is usually looked up to and respected in his community, and fills a very important position in it. His work contributes to the maintenance of health, and is therefore a valuable form of public service.

The hospital pharmacist is the professional compounder and dispenser of drugs and medicines in the hospital. The commercial element is entirely lacking in his work. The hospital pharmacist's work is pleasant and allows him a certain degree of independence. The demand for workers in this field is an active one, and the salaries are quite satisfactory.

Those young men who find that their chief interest in pharmacy lies in the laboratory work may prefer to work as pharmaceutical chemists, drug analysts or research pharmacists in medical manufacturing houses. For this type of work, training in pharmaceutical chemistry is essential. A thorough knowledge of the chemistry of medicinal substances, of their origin, dispensing and effects and of the utilization of the products evolved in other branches of chemistry for pharmaceutical purposes should be part of the equipment of the pharmacist who specializes in research and analysis. In the manufacturing of drugs and medicines, expert pharmacists are put in charge of the various departments, and have a chance to develop their knowledge in their own particular fields of work.

In the research laboratory and analysis department of manufactories, drugs and all sorts of medicinal products are subjected to scientific examination, and their specific curative properties isolated. The work of reproducing such properties by synthetic means is also carried on in the laboratory.

The pharmaceutical chemist renders crude products capable of being used for medicinal purposes, through processes of cleaning, purification, refining and mixture. Most of the drugs used by prescription pharmacists are brought by them, after the drugs have been already prepared for immediate use by the pharmaceutical chemist.

Laboratory work is likely to be of special interest to the man who views pharmacy from the professional rather than the commercial angle. It is work which requires a studious nature and a scientific turn of mind, and the ability to concentrate energies and efforts upon the solution of whatever problem is being investigated. The work is intensely interesting to the man who has the progress of the art of healing at heart, and who has the ability to follow out original lines of investigation. Many industries employ pharmaceutical chemists in an effort to improve their processes of manufacture, and the demand for well-qualified men is steady. The salaries usually range from about $2,000 a year upward, and for men of expert knowledge and ability the opportunities in this branch of pharmacy are almost unlimited.

The pharmacist's services to the community are very important. Without his help, the physician would be unable to proceed with his work, and the control of illness would be much less advanced than it actually is. He supplies a decided want, and finds satisfaction in the realization of the significance of his work.

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CHAPTER XXXVI

PLUMBING AND STEAM FITTING

The advances in the study of sanitation have brought the work of the plumber into prominence. The plumber of today must be more than a mere mechanic; he must be somewhat of a sanitary engineer, for it devolves upon him to help maintain the health of the community. Sanitary plumbing is a protection against disease and is a necessity for healthy homes, and so the plumber has not only a good trade, but one which advances the welfare of the community in which he lives. Epidemics, fevers and other ills are often directly traceable to faulty plumbing; and the conscientious workman, who makes his trade a scientific one, performs a real public service. The hygiene of the dwelling house as well as of the factory and office building must receive due consideration if the productive power of the workers is to be kept at its highest point, and this work to a large extent devolves upon the plumber.

Modern plumbing, as a trade, consists in the arranging and running of pipes to supply water to buildings, the setting up of fixtures in order that the supply may be utilized and the installation of other pipes for resulting waste matter. The plumber must also have a knowledge of hot-water and steam-heating systems, although such work often is done by a steam fitter, whose duties will be discussed later. The young man who desires to become a plumber must first serve as a plumber's helper He carries the tools, supplies the plumber with materials, cuts pipes and threads and makes minor fittings. As an apprentice or helper, he has an opportunity to learn by observation and gradually to acquire skill in his trade. The period of apprenticeship is dependent upon the ability of the man and upon local conditions, and may last from two to four years. The plumber's helper acts as an assistant until he has fully demonstrated his ability to install plumbing, when he attains the rank of journeyman plumber. His duties then include the installation and repair of all plumbing and fixtures, which involve the running and connecting of pipes, brazing and wiping of joints and the connecting of traps, vents, cocks, etc.

The journeyman plumber may develop into a foreman, who supervises the installation and maintenance of all classes of sanitary plumbing and fixtures. . To become a foreman he must be an all-round licensed plumber and must be able to work from drawings and to lay out all types of work. He must have had wide experience on contracts while a journeyman plumber, and be an expert in his line.

If the plumber desires to specialize along one line, he has an opportunity to do so. He may, for instance, become a marine plumber, whose duties are to install and repair all plumbing equipment and fixtures on ships. Such a man must have served his apprenticeship with a marine plumber and must be an adept in handling large sizes of lead pipe.

The plumber may prefer to build up a business of his own in the community in which he works. Since he owns his tools, they, with his experience, can form the foundation of that business, even if he has only a limited amount of capital. It is the usual thing for the plumber in the smaller cities to run his own business and, if he has the tact and determination to accomplish that much, the business may become a growing one.

The plumbing trade has now often come to be a merchandizing business, and the plumber who owns his business is now also selling supplies. This is a very satisfactory method of combining merchandising with a trade, for the plumber does not have to keep a very extensive stock, but handle just the type of goods that will be needed for his work.

Since all plumbing must be installed properly, as the building departments inspect not only the plans but also the buildings, there is an opportunity for the wide-awake man to become a building inspector. An inspector must have a wide knowledge of the plumbing trade and should have learned it just as thoroughly as though he expected to practice it.

The man who prefers steam fitting to plumbing has a trade which demands a thorough knowledge of the fitting of all types and sizes of steam lines, the making of pump, boiler, oil, air and radiator connections and the connecting up and adjusting of steam thermostats and gages. He must first become an apprentice or helper, and assist the journeyman steam fitter. He must be able to read drawings and make ordinary measurements and calculations, in order that he may qualify as a steam fitter. As a journeyman steam fitter, he must be thoroughly skilled with his tools, understand general pipe fitting, be able to calculate and cut lengths of pipe, be able to install either vertical or horizontal steam lines and understand thermostat heat control.

The ambitious steam fitter may become a foreman and then, in addition to his knowledge of the trade, he must have a knowledge of men and an ability to control them and lay out their work. The steam fitter may own his business, if he proves capable, or he may work with a plumber or be in partnership with him. In small communities, the plumber may also do the steam fitting.

The man who takes up plumbing should have at least a common-school education. If he wishes to advance and become either a journeyman plumber or run his own business, he should have a technical or trade school training. In every large city, and in many of our smaller ones, trade schools are being established to give a preliminary knowledge of the mechanical trades both as to theory and practice. Such schools do not take the place of apprentice work, even though the training is practical, but they do give the theory of the subject along with the practice, and eliminate one or two apprentice years.

The young apprentice can, if unable to attend a trade school, secure instruction in evening technical schools or, if he is not so situated as to be able to attend either, he may obtain a knowledge of the theory of his trade through correspondence courses and books.

Of course, with such work as the technical or trade school may offer on the subject of plumbing itself, the man who desires to advance and assume leadership in his occupation must have a good command of the English language, the ability to interpret plans and drawings in which mechanical and scientific thought find their expression, and a knowledge of physics, chemistry and mathematics. He must understand the principles of hygiene and sanitation and know how to apply them. The expense of the training for the plumber's trade is very low, for the trade and technical schools, as well as the night schools, are usually a part of the educational system of the community and therefore furnish free tuition. Further information as to such schools in the community can be furnished by the local or state Board of Education.

The wage of a journeyman plumber varies from $35 to $50 a week and the average is about $44. The apprentice or helper gets about $25 a week. The man who runs his own business, and does some merchandising along with it, is able to earn a larger amount. A good plumber should earn not less than $2,000 to $3,000 a year and, if he has a merchandising business or employs several men to work with him, he may make from $3,000 to a possible $6,000 a year. The plumbing trade provides steady employment at good wages and with good hours, but the man who does not loaf on his job but puts all his ability and enthusiasm into his work is the one who earns the best income. The small town offers decided advantages on account of the growing appreciation of modern plumbing facilities, while the large cities, where constant building and remodeling take place, offer a practically unlimited field for the plumber and steam fitter.

The young man who wants to be either a plumber or a steam fitter must be strong physically. He must be intelligent, industrious and persevering, and possess tact and determination, or he will never be able to be more than a fair workman. A surly man antagonizes whomever he works for, so a courteous and obliging disposition is as necessary to the man who would become an efficient plumber, as his ability to manipulate the tools properly. His work is often with housewives and persons who do not understand plumbing, so he must, even on the smallest job, combine good temper with his skill. Personality counts in the plumbing business as in every other line of work, and a pleasing personality will prove as valuable to the plumber as his knowledge of the trade.

The trade of the plumber is one that offers a good future, for all over the country more and more plumbing is being used. Farm houses, which formerly depended upon pumps for their water supply, now are being remodeled so as to include sanitary plumbing; or, as new houses are being built, the bathrooms, sinks in the kitchens and other conveniences are installed along with the furnaces. The increasing number of bathrooms that are being installed in these farm houses alone shows the possibilities that lie ahead of the ambitious plumber. The work on sanitation, which is being developed by state and national boards of health, as well as by individual effort, is also bringing work to the plumber.

The work is hard and the plumber is often called upon at most inconvenient times, especially in cold weather. The work is also dirty, though not unhealthy. But the man who is fond of tools and is willing to work hard, will find that there is a steady demand for trained plumbers at good wages and that such a workman has exceptional opportunities to go into business for himself. The plumber who enjoys his work and becomes a sanitary expert in his community and helps to keep that community healthy makes a vital contribution to the welfare of his fellow men.

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CHAPTER XXXVII

PRINTING

Printing is an activity of an advanced state of civilization. The beginning of modern history is dated from the century of the discovery of printing, in 1440. Before that time all manuscripts had to be copied by hand. They were very rare and valuable, and were usually in the possession of the monasteries where the monks copied them and exchanged them with other monasteries. Very few people knew how to read besides the monks and priests.

Printing is fundamentally a social activity. Printing is needed to disseminate the knowledge that has been accumulated in the past, and the knowledge of what is going on in the present. A man living before 1440 had no communication with the world more than 30 miles away. He lived and died in the same village, with the same amusements, the same position in society and the same standard of living. If one stops a moment to think of the changes that have taken place in politics, religion, geography, education, agriculture, manufacturing—in every human activity and in ways of living since the fifteenth century—one realizes how large a part of this progress is due to the spread of knowledge through printing. If one were to write down every idea that came to mind during the day, he would be astounded to find how many of them came from a newspaper or a book. Thus one may appreciate how poor was the store of ideas of any man and of the world in general before printing, and how large a part printing plays in our lives.

Today more than a half million people are employed in the United States in the printing trades. Printing is a highly specialized industry, and each division has many separate processes. Although printing was invented in the fifteenth century, the industry remained in a comparatively elementary state for years, and most of the wonderful machinery in use today has been invented within the past fifty years.

Printing may be divided into three processes: typography, in which printing is done with raised letters; copperplate, in which the letter is sunk, the center being filled with ink; and lithography, done by using the surface of stone which is capable of absorbing grease. Lithography is used in illustration, mainly colored poster work, and copperplate, for cards and announcements, as well as illustration. Typography is the process used for ordinary printing.

Typography may be roughly divided into two parts: composition and presswork; but the work is specialized, and in a large establishment there may be twenty or more different kinds of workmen in each division. There are many different machines for both composition and presswork, and often a printer is trained to operate one kind of machine and sticks to it for a lifetime.

Composition is the process of putting the letters of type together. In small establishments this is done by hand and is a tedious and lengthy process, in which great deftness and dexterity must be acquired. In larger establishments machines for composition are used, known as the linotype and the monotype, which run on the keyboard principle like a typewriter.

After the material is set up in type, proofs are printed, usually on a hand press, and the material is looked over by a proofreader, who corrects all the errors, assisted by a copyholder, who reads the original manuscript to the proofreader. The corrector of the press takes the proofread material and changes the type to correspond with it. Then a stoneman arranges the type pages on the imposing stone so as to cause them to appear in their proper places on the folded sheet. This work is called imposition. The forms are then locked and ready for the press.

In the pressroom, print is transferred to paper. There are three types of presses; platen, cylinder and rotary. The platen press, which is used in job printing, is the smallest and easiest to use. It has two flat surfaces, one of which has the type form, and on the other the paper is placed. In the cylinder press the paper is revolved on a roller, and does not have to be fed and removed for each impression. The rotary press has two revolving cylinders, one for the paper and one for the type. Newspaper presses are composed of several rotary presses together with machines for cutting and other operations. A modern newspaper press prints, folds, cuts, counts and stacks, in packages of 50, as many as 75,000 papers an hour.

A pressman on the ordinary cylinder or platen press must adjust the forms on the press, feed the paper, supply the ink and regulate the press. A pressman on a rotary or a newspaper press must be a thorough mechanic. A newspaper pressman has assistants who act as brakemen, oilers and flyboys, who are kept constantly oiling and cleaning the press, besides regulating it.

Two important processes now used in typographical work are stereotyping and electrotyping. Stereotyping is the process by which a mold of the printing surface is made of paper pulp, which is then curved, and hot stereotype metal poured in to make a cylindrical form. This process is used chiefly for newspaper work. For books and other permanent work, electrotyping is used. An electrotype is made by taking a wax impression of the type form, and depositing in this mold a thin shell of copper by an electroplating process, and backing this with type metal. This is then mounted type-high either on wood or metal, and used in the same manner as type.

Illustration is chiefly done by photoengraving and lithography. These processes are the best paid in the trade, and offer opportunities to anyone with an artistic inclination. Photoengraving is used in newspaper work, and it employs artists, skilled photographers and etchers, besides the regular skilled workmen in the branch. Lithography is used for poster work, for all sorts of colored advertisements and for magazine covers, etc. Artists in this line are well paid.

Printing establishments commonly do only one kind of work. Small shops do job printing, such as letterheads, cards and announcements, and larger firms do book printing, magazines or newspapers. Some shops specialize in ruled notebooks or check books, and some do only posters and illustrative work. This makes the average printer proficient in one process on one kind of work and makes it difficult for him to transfer to other shops.

However, there are many distinct advantages over other skilled trades in the printing industry, for printing is an essential industry, and only slightly affected by the seasons of the year. It is the sixth industry of the United States by the last evaluation. It is growing, and will not be revolutionized by new machinery in a day. The advent of machinery only increased the possibilities of the industry a thousandfold and required more skilled workmen than before. Printing is a well-organized industry, where the owners as well as the workingmen are organized, and there are rarely any prolonged strikes. The unions regulate wages, sanitation, ventilation, lighting and safeguards on machinery; they provide technical schools, life insurance and pensions; and they have even established a sanitarium at Colorado Springs for their members.

Printing is a comparatively healthful trade. Cases of plumbism, or lead poisoning, have occurred, but the ventilation and sanitation of modern shops almost eliminates any danger of it. The slightly stooped position of the printer has caused tuberculosis in men with weak lungs, but a normally healthy young man who takes outdoor exercise has little to fear in this direction. There is eyestrain in printing, and a printer must have keen, healthy eyes; but there is eyestrain in studying a profession and even in an ordinary college course. There are practically no machine hazards in printing, and no exposure to bad weather. The work is interesting, for the printer sees all the books or papers before they are published, and he has something to occupy his mind while working.

Printing is one of the best paid of the skilled trades. In a limited survey made in 1915, printing ranked second in wages. It was exceeded only by the building trades, and it ranked higher than the clothing trades, the steel industry and the automobile and foundry occupations. The work is steadier than other trades. The printing trade is distinguished by its use of more American-born labor than the other trades. It also appeals to a young man because it is distinctly an industry of small establishments. In the city of Cleveland it was estimated that 50 per cent of the shops had only one to five men. This provides splendid opportunity for advancement and for going into business for oneself.

The printer, as was mentioned, should have normally good health and eyesight, intelligence, alertness, a sense of order and neatness, ability to read quickly, an artistic nature and a creative instinct. Since printing is a trade which requires considerable skill gained through experience, there is usually four or five years of apprenticeship, and it is said that it takes from six to ten years to make a good pressman. An apprentice in the composing room begins by cleaning up the room, and becoming familiar with the type through washing it. Soon he begins to assist in setting up type, which requires long practice. He then learns to lock up the forms. He may also act as copyholder. An educated young man may be assigned to the work of the copy editor, who corrects the errors in spelling and punctuation before the manuscript is given to the compositor. Where there are linotype machines the apprentice begins by cleaning the machine or parts. In the pressroom the apprentices are errand boys, they clean ink from the presses, wash type forms, feed paper into the press and do other useful work. An apprentice in the pressroom can take evening courses in a technical school and become a highly paid pressman or foreman. There is no formal apprenticeship in the other printing branches, and a young man must break in and do the best he can. The poster artists in lithography, however, have an apprenticeship system.

The wages of a journeyman printer, or experienced worker in any of the different branches, vary from $20 to $40 a week, according to the skill required in the process, and individual skill and experience. Foremen and mechanics earn from $40 to $50 a week. In New York City, and in other large cities where there is a great demand for skilled printers, the union scale for compositors is $50 a week, and shops pay even more for men of ability. A printer with initiative and business ability can start out in his own establishment more profitably than in many other trades.

Apprenticeship is necessary to acquire skill and deftness, but a printer, in order to learn more than one process, and to be eligible for advancement, should attend a trade school. A printer must have a good knowledge of the English language, of grammar, spelling, punctuation and a fund of general information. A mechanic must know some physics and chemistry, and at least two years of high school training is desirable. An ambitious boy can go to evening high school and work in the daytime. There are many technical high schools in the large cities that give evening courses, and there are a number of schools of printing. In some cities the union demands that in the fourth and fifth years of apprenticeship the young man attend the evening school of the union.

The United Typothetæ of America has published a series of about sixty handbooks on printing, which an apprentice might easily study in his spare time. In many high schools there is a printing shop and a young man who is in earnest might profitably spend his time working there in his spare time. Information about the schools in each city can be obtained from the local union headquarters, or the Board of Education. The young man who wishes to go into the printing industry should, while in high school, take a particular interest in English, physics and chemistry, and in art-drawing, lettering, design, color harmony. A printer should be able to do arithmetic mentally, for much time is wasted in figuring out the position of designs or words on paper. A boy who intends to open his own establishment should take a business course in cost accounting, bookkeeping, etc., for a business that is not run on a black-on-white basis is not likely to succeed.

The printing trade is a good, solid trade; it pays well, offers pleasant work and gives many opportunities to young men of different inclinations, such as artistic, mechanical or literary, as well as an opportunity to open one's own establishment.

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CHAPTER XXXVIII

PUBLISHING

It is not often that we realize our indebtedness to the publisher for all the reading matter, light and heavy, which amuses or instructs us. We seldom think of what would happen if authors depended upon their own efforts for the production of their works in a form suitable for general distribution. All the most beautifully hand- or typewritten copies of his work which one man might turn out in the course of years would be unequal to one printed edition of the work as produced by the publisher. The publisher makes reading matter available to the public, easy of access and of dissemination, and capable of being preserved through long periods of time. The publisher is to be thanked for much of our progress, for through his work knowledge is preserved and spread, and the desire for its acquisition stimulated. Newspapers, magazines, textbooks, technical works, novels, poems and all the other types of literature which afford us entertainment and instruction owe their existence as printed matter to the publisher.

It may perhaps be said that the printer could do what the publisher does. But this is not so. The printer simply makes printed copies of whatever is given him, receiving in return a stated compensation. But the publisher buys literary material, puts it into suitable printed form and sees that it is marketed. His work is, therefore, not like the printer's, simply a result of technical operations, but requires a mixture of professional effort and business skill. The publisher's responsibility is a great one; it devolves on him to supply the public with the sort of reading matter which promises to have some real effect upon the development of the people whom it reaches. It is his duty and great privilege, also, to forward artistic advancement by publishing works of artistic value, which will not only directly influence those who read them, but will serve also as an impetus to further artistic creation.

The publisher's work is difficult, for he deals with something which is hard to estimate at its true value, or even at its approximate commercial value. He cannot say, when a book is offered to him for consideration, "This book would make a volume of five hundred pages; therefore it is worth more than a shorter one of only two hundred pages." And he cannot say, "This book is on a topic which has already been treated; therefore it is of no value." There is no arbitrary standard whereby writing as a commodity can be judged. There are hundreds of things which must be considered by the publisher every time a work of any sort is offered to him.

The individual problems of publishers differ according to the particular branch of the work in which they are engaged. The chief divisions of publishing are as follows: general literary and fictional, technical and scientific, medical and periodical and newspaper. The general duties of all publishers, except newspaper, are the same. They select, from the work offered them, that which best meets their needs and the wants of the public, get this out in a suitable form and attend to the selling of it. Publishers also occasionally commission writers to work upon certain designated subjects which are either closely defined, or else left largely to the judgment of the author, according to the individual circumstances of the case.

To be successful, the publisher must be possessed of a taste for literature, combined with business ability. In the field of medical and technical publishing, it is desirable that he have some knowledge of the subjects which are dealt with in the books he publishes. A medical publisher should be somewhat familiar with medicine, in order to judge adequately the value of certain works to students and practitioners. In the case of technical or scientific publishing, little more is necessary than a general surface understanding of the various subjects with which the publisher may come in contact. For newspaper and magazine publishing, a knowledge of news values is required, and for fiction and general literary publishing, a background of general literary education is exceedingly useful.

The publisher's first problem is that of selecting the proper material for publication. In the technical line, this is often not so difficult, since one definite group is appealed to, and only its special and usually well-defined interests and needs are to be considered. But in the field of fiction, the matter of choosing the proper work is more difficult. Every publisher must, of course, be endowed with common sense and judgment, and he must also have the ability to realize when another person's judgment is better than his own. If the publisher has a good understanding of popular psychology, if he keeps abreast of the times and is something of a literary critic, he will probably choose the right thing often.

The publisher must attempt to probe the mind of the public, to consider to what class and number of the public the manuscript under consideration would appeal, how it measures up to similar works, what the reputation of the author means and whether, according to his own experience and that of others, there is a likelihood of the book's succeeding. Shrewdness, judgment, a knowledge of human nature, far-sightedness, caution and yet something of the gambler's willingness to take a chance are all qualities which should be possessed by the publisher.

When he has decided to accept a manuscript, the technical work of getting it out in proper shape will next occupy his attention. The publisher considers books not only with regard to their contents, but also in the extremely tangible sense of printed pages bound together and appropriately covered. To him the dress in which the book appears is of considerable importance. In order that he may know how to produce beautiful and durable books at a minimum of expense, it is necessary that he have some practical knowledge of typography and bookbinding. He must consider the quality and size of the paper to be used, the kind of print and the material and style of binding. And he must always consider not only the final appearance of the book, but also the ultimate profit which he hopes to make from it. For this reason a practical working knowledge of the actual making of books is desirable, for it enables the publisher to regulate his expenses.

It is next the publisher's work to sell the finished book. Selling books is not easy. They are not necessities like food or clothes, and comparatively few people buy them. There is, of course, always a steady demand for newspapers, but even this is a limited one, for few people buy many papers in the course of one day. There is always a rather steady demand for the cheaper weekly and monthly magazines, but these periodicals would hardly be a profitable venture, were it not for the large amount of advertising matter they carry. There is a steady but not very active market for standard works, but a market or buying public for new works of fictional or general interest must first be created or stimulated by the publisher.

The business of creating a market requires, on the publisher's part, a thorough understanding of the principles of salesmanship, and as thorough a knowledge of popular psychology as possible. The publisher of new books depends to a great extent upon advertising to bring him buyers. In order to advertise books successfully, the publisher must, in a certain sense, feel the pulse of public interest. He must know what it is that the public, or that particular portion of it which he is trying to reach, is interested in; he must know what qualities of the particular book will appeal to or satisfy that interest. He must know, also, the literary styles and fads of the moment, the type of work which is likely to succeed at the time, the authors whose names have a commercial value, and should be able to estimate fairly well the general extent of interest and consequent demand which the book will arouse. This cannot, of course, always be estimated. It is just this point which is so often a matter of chance. Sometimes it may seem to a publisher that, according to all experience, and according to all indications, a certain book should sell heavily. And this very book may prove a drug on the market. This condition must be accepted—absolute certainty of success can never be guaranteed, but it is reasonable to suppose that the man with the qualifications and abilities mentioned will have considerable success in judging the subject matter of books and in estimating their commercial value correctly.

Education is of great value to a publisher. Men with little or no schooling have succeeded as publishers, but these men were usually students by nature if not by training. A college education will equip the prospective publisher with a general cultural background which will give him a certain balance and critical knowledge of literature as a whole. For the publisher of technical works, some education along a special technical line is likely to be of great value. For the newspaper and magazine publisher, a preliminary study of journalism and work as a reporter or editor is not bad preparation. The more a publisher knows about the particular field in which he expects to be engaged, the more chance of success is his. There are no school courses in publishing as such. Some men graduate from college and enter a publishing house in a subordinate position, working themselves up by means of energy, initiative, the ability to "pick a winner" or by organizing a successful sales campaign. Others take a preliminary course in the printer's shop; they learn the business from the technical end, and then set up as publishers.

The school of experience is the best in which to learn the publishing business. Education is a great help, but it alone will never assure success. Sound common sense, great energy, both physical and mental, discrimination, far-sightedness and honesty are essential qualities without which no one can hope to win success as a publisher. The need of absolute integrity and whole-hearted sincerity cannot be overemphasized. The publisher must be honest in all his dealings with author and public. He is entrusted by the writer with work whose value is usually uncertain. He will have a pretty shrewd idea of its commercial worth, and must be honest enough to make terms with the author which will be fair to both. In backing and advertising a book, also, sincerity of purpose is essential. Unless the publisher himself has a certain amount of faith in the work, and really considers it worth while, his advertising will carry a false note and, worse than that, he will be deceiving the public into buying something of doubtful value.

Publishing offers to the right sort of man a fascinating career. The person who enters this field must have a real love for books, must be willing to put a vast amount of energy into his work and to consider many other things besides profit. It is impossible to predict the financial returns which publishing may make to the ambitious worker. Some men have made almost nothing, and others have amassed fortunes and built up fine reputations at the same time. But the other advantages which may be expected from following publishing as a profession may in most cases be foretold. The publisher, through the very nature of his work, comes in contact with all the finest thought and experience of his time and of times past. He has much opportunity also to form acquaintances and friendships with interesting men and women, many of whom are the great personalities of his time, to discover hitherto unknown talent and to promote art and knowledge.

Often he will be disappointed in the response to some book in which he has had great faith; sometimes, too, he will even be discouraged. And he may be tempted to forget that he must consider profit as well as other things, and so put upon the market some book whose qualities of beauty and artistry may especially appeal to him, and which may yet not have the attributes to make it a salable commodity. But the temptations and disappointments and even occasional discouragements of the publisher will not prevent the man of energetic personality from keeping on at his work. He will realize that all these things are part of the game, and that they even contribute to its charm.

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CHAPTER XXXIX

SALESMANSHIP

The importance of the salesman in the economic life of today can hardly be overestimated. In the old days, when business transactions were simple, the producer and consumer were able to get together and buy and sell without any intermediate agents; but today the vastness and complexity of industry and commerce have made buying and selling a complicated matter. Many transactions are involved before the product reaches the consumer, and in every one of these transactions the salesman plays an important part. Whether he represents the producer, jobber, wholesaler, commission-merchant or retailer, the salesman's services are indispensable. Without him, goods could not be sold, the wheels of industry and of commerce would stop and our economic life would collapse.

Salesmanship is not the hit-or-miss proposition it once was, depending, as it *did*, upon the cleverness of the individual engaged in it, and upon his ability to sell regardless of consequences. Today, salesmanship is both an art and a science, of which the principles have been definitely determined and worked out. No salesman can hope to succeed who has not made a study of these principles and learned how to apply them.

The fields of salesmanship are as varied as industry itself. Perhaps the largest is the retail field. The man who becomes a salesman in a retail store, must have a thorough knowledge of the stock which he is selling and be able to utilize that knowledge in his business. The retail salesman has a broad field, from the ten-cent store and the specialty shop to the large department store; and in all of them the job of salesman may lead to higher positions. The man who makes good as a salesman may become a floor superintendent in the store. His duties will then include little or no direct selling, but he will be responsible for his floor and will meet and assist customers in every way possible. Or he may become head of his department and eventually buy whatever is sold in that department. The highest position a salesman can aspire to in the retail field is that of store manager. The store manager may own his store or he may be hired by a firm. He is absolutely responsible for the success of the store, and so he must be a capable executive, who can efficiently and economically manage the concern. A knowledge of men is as essential to the store manager as a knowledge of goods, for he must necessarily depend to a great extent upon the performance of the men working under him.

Though openings in the retail field are plentiful, many salesmen prefer to work with wholesale concerns. Often such men become traveling salesmen and have a certain amount of territory assigned to them, which they cover for their firm. The traveling salesman has to find his customer, as well as sell goods. He must know the best seasons to visit his customers and must develop points of contact with them. He travels from place to place and serves not only his old customers but is constantly on the alert for new ones. The territory of the wholesale salesman may be in the city, country or foreign lands, and the firms he may deal with vary from city shops to rural general merchandise stores.

The specialty and book salesmen solicit their trade from house to house or from firm to firm. Persistence is the keynote of their success, for they sell by direct solicitation of the customer whose interest must be aroused, usually against his inclination. The salesman of securities is also classified as a specialty salesman. He solicits his trade from place to place, usually from a list of prospects, and must have a thorough knowledge of business conditions as well as of the bonds he sells.

The salesman who is especially successful may become a foreign representative for a concern. Such a man goes out to make his own markets, and must have a fund of information regarding commercial law and trade customs in addition to being an expert in his own line. Or the successful salesman may advance to sales manager. He will then have complete control of the salesmen in the field for his firm, and will direct them from his office. He must keep an index not only of his salesmen but of the customers visited by them; and so he needs a mind for detail. The sales manager, because of his own experience in selling, is able to direct other salesmen to good advantage.

A high school education is very helpful to the young man who desires to be a salesman. The educational background which he will acquire in the average high school will help him in whatever line of salesmanship he may enter. He should know something of accounting, and should study whatever commercial subjects the school has to offer. Advertising and stenography will be very useful, though not absolutely essential. A good general education is necessary, and should include history, geography, psychology, English and arithmetic, with special emphasis on the last two mentioned—for all salesmen must have a ready command of English, and must be able to compute sales readily.

The courses studied in the high school may be supplemented by training given by competent instructors in the store schools. Such schools give courses in the theory of salesmanship, practical selling, knowledge of house policies, study of competitive products, knowledge of marketing and whatever other subjects may be of particular benefit to their own concern. The John Wanamaker Commercial Institute in John Wanamaker's store in Philadelphia, and the National Cash Register Company's school are examples of schools, both for retail and wholesale salesmen, where a thorough knowledge of the concern and its products, plus training in salesmanship, is given. Lectures on salesmanship are also given either in up-to-date stores or in Y. M. C. A. centers and attendance at these lectures as well as careful reading of store manuals, publications or magazines will prove extremely helpful. The young man who can attend a school of commerce at a university will find that he will advance more rapidly as a result of such training. However, such schools usually have courses extending over a period of two to four years, and inability to attend them need not hamper the young man.

The cost of preparation for salesmanship may be very nominal for the young man who enters upon his work directly after leaving high school. The expense of the man who attends college ranges from $2,000 upwards, dependent upon the school. The young man who is unable to attend either high school or college may serve an apprenticeship in a store as an errand, cash or stock boy, and if he is ambitious he will learn a great deal about salesmanship, and be prepared to become a salesman whenever the opportunity offers. He can also supplement his store training with courses at night schools.

Salesmanship offers a chance for success to every man who enters upon the field, but he must utilize his own capabilities to forge ahead. The average traveling and city salesmen have a drawing account and a commission on sales over a certain amount. In the wholesale and specialty field there is great opportunity to earn big salaries, for the low mark is $100 a month, and the man representing a firm abroad sometimes earns $25,000 a year. It is not unusual for a traveling salesman to make $3,000 to $5,000 a year, but the work is strenuous. The salesman in a retail store usually earns from $20 to $40 a week, while a salesman expert in one line may receive as high as $100 a week. If the salesman becomes a store manager he will find that his salary depends upon the size and kind of store and the locality in which it is situated. It will range from $5,000 upwards if it is a growing store in a medium or large city.

Courtesy, honesty and a neat appearance are three essentials for the salesman, for without them he will never be able to make friends and sell goods. He must be possessed of tact and sincerity and must be observant and a good judge of human nature. Good health and good conversational ability are as necessary to the salesman as a good memory and a cheerful manner. He must be willing to attend to trifling details and small sales with as much patience as he would use in larger ones and he must have persistence and energy and an interest in his work. A good personality helps in the making of new customers, and self-control and will power are essential when failure to make sales brings discouragement.

The salesman has to deal with an impatient, hurried public, whether he is in retail or wholesale lines, and he has to subordinate his wishes to those of the customer. If he is a traveling salesman, he misses much of the home life he would like, and has to live in hotels and go through the oftentimes exasperating business of making train connections. But there is little monotony in his work, and his salary is usually sufficient for his needs. The retail salesman in a city is liable to remain a salaried man, but the hours are well regulated by custom and state laws, and annual vacations are granted at full pay to the man who remains with his concern. Half holidays are customary in city stores during the hot months. In the smaller cities, the hours are often longer than in the larger communities, but the salesman has more opportunity to become a proprietor himself. Lunches are served at nominal cost in many stores, and a lunch and rest room is provided; while doctors and nurses are on hand for any emergency in the larger concerns.

The demand for competent salesmen usually exceeds the supply, but, although the field is large, it is only the man with brains and the trained ability to use them who is likely to succeed in any branch of this work.

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CHAPTER XL

SECRETARIAL WORK

The vocation of secretary offers unlimited possibilities to the ambitious man who is alive to his opportunities. A secretaryship is an education in itself and a splendid introduction to the business world. The secretary is not only associated with men of affairs, but is frequently trained in business methods and problems by the very head of the establishment for which he works—an advantage which few other employees enjoy. An efficient secretary doubles the working power of the executive for whom he works, and frequently becomes as indispensable to his firm as his superior.

The word "secretary" has its origin in the word "secret," hence the secretary is a person entrusted with secret or private matters, his work depending to a great extent upon the position filled. A private secretary is a confidential attendant, who relieves his employer of all possible detail work and of such executive matters as he can manage. He should be a capable stenographer, be able to write letters on his own initiative, be something of a bookkeeper, note his employer's engagements, act as a buffer between his employer and the various persons who desire to see him, file letters and documents and, above all, learn how his employer wants things done and do them in that way. An efficient private secretary knows more than the office routine; he is willing to assume responsibility; he is able to think independently and yet execute the thoughts of his employer.

A private secretary may have begun his training as a stenographer, but, if he becomes a secretary, he has not only shorthand and typewriting to do, but has executive duties as well, with a resulting increase in responsibility. His duties expand as his employer becomes acquainted with his possibilities, and very often a private secretary finds his position a stepping stone to higher places. Many persons in responsible positions started as private secretaries and then, as opportunity arose, were advanced to responsible positions because of their interest in, and knowledge of, the business.

The secretary must have a high sense of business ethics and must not discuss his work outside of the office. He may be associated with an employer in commercial, financial, religious, scientific or professional fields and, if he is aware of his own best interests, he will select the line of work in which he is most interested. He may have an opportunity to become a private secretary to a member of Congress, and such a position may afford him entry into politics. Many men have won public prominence in this way.

The corporation secretary must have the qualities of the private secretary, although such a position is not in the usual line of advancement from private secretaryship. The man who has had secretarial experience makes an efficient corporation secretary and, if a company desires a secretary who is thoroughly capable, it may offer the position to an exceptional private secretary in its own employ. However, this is one of the things that come only to the man who is in work that is congenial, and where his endeavors to rise will be respected because of his interest in his work.

The man who becomes a secretary to an institution or organization will be brought into close contact with the governing body of that institution and will have a position that, though nominally supervised, is really executive. He will find that such a position will require executive ability of a high order and that he will have to possess a great deal of tact to get along with the various committees. He will have not one employer but a great many people, who, perhaps, may know little about the work, to deal with. One of the outgrowths of this type of work is the position of secretary to Chambers of Commerce in cities or towns. Such a man must get out of the community, through organized effort, as much cooperation as possible, and unless a man is far advanced beyond the stenographic period he is not suited for such a position. It needs originality and executive ability of a high type, as well as genuine enthusiasm for the work.

The public-office-holding secretary is one who has been appointed or elected to a political office where he performs the duties of that office. He has executive powers, and such positions, particularly in smaller communities, often prove gateways to political power.

The young man who expects to become a secretary must equip himself for the work ahead. He must realize that it is necessary for him to have a thorough knowledge of the basic subjects of English, arithmetic, geography and history, with particular attention to English composition and spelling. A speaking knowledge of a foreign language, French or Spanish preferably, is exceedingly helpful. An understanding of stenography, filing, and bookkeeping, and a sound broad knowledge of business, are the tools of the secretary and are essential to good work in his position; but, beyond all these, a good working knowledge of English is perhaps the most necessary. Unless the secretary is proficient in English, his use of shorthand will be hampered, as shorthand is really a system of writing English rapidly. He also needs this knowledge in composing letters, just as he needs arithmetic in his bookkeeping. He must use method in the office, for his work should never be impeded by lack of system; and so the secretary should be naturally methodical and systematic.

The secretary must guard against undesirable limitations of his interests and narrowness of outlook by not only having a broad education but by constantly seeking to improve it. A college education is desirable, but not necessary, though the better class of firms now prefer college men. However, the man who is unable to attend college will find that, if he is willing to read and study, such a lack will be of little hindrance. A good high school education is absolutely necessary, and special preparation for secretarial work can be had in many high schools. The student who prefers to take such work in special secretarial schools will find that there are in every community at least one or two business colleges, where a student can, in from one to two years, acquire a fair knowledge of, and training in, shorthand, typewriting, business English, spelling, penmanship and similar subjects.

The universities have begun to appreciate the appeal of the business world to the young man and are adapting their courses to his needs. Business departments, wherein not only business routine but a well-diversified education is provided, are becoming a part of our great universities, and the young man who can afford the time and money to take such a course will find himself well repaid, as his value in the business world will correspondingly increase. Evening schools, giving business courses for the man who works, are a part of the school system of most cities. There are also evening classes in the commercial schools and the extension courses of many universities.

The cost of preparation for secretarial work varies from nothing at all, if the student takes it at the regular high school, to several thousand dollars, if he takes university work. The usual commercial school course takes at least six months, and the tuition varies from $15 to $40 a month. The public high school offers both day and evening courses with free instruction. The evening classes in private commercial schools meet three or four evenings a week, and the tuition is from $5 a month upward. The business departments of the universities demand a high school education for admission, and the courses take from two to four years to complete. They prepare a man for more than a secretarial position, however, for he has the background, both in collegiate work and business training, for an executive position. Since a secretarial job often leads to such work, it makes the course doubly valuable. The expense of the college training varies from $1,500 to $4,000, dependent upon the institution and the length of the course.

The financial returns for secretarial work vary greatly according to the nature of the position held. The salary for a private secretary varies from $25 to $100 a week, but the beginner usually starts with a stenographic position which may pay only $15 a week. In the executive offices of large corporations, the secretary who proves his worth has not only an opportunity to learn the business but also receives a good salary and may even be promoted to a responsible executive position, such as head of a department, the vice-presidency, etc. The work is steady, and a good secretary can usually find a position. Civil service positions may also be applied for, but the work is mainly stenographic, and offers little opportunity for advancement. In almost all secretarial positions the conditions of work are excellent, and a two weeks' vacation with full pay is usually granted every year.

The young man who wishes to become a secretary should be trustworthy, unselfish and industrious, and should have the ability to keep silent regarding his employer's affairs. The work is often hard, and so he will need good health, and skill in adapting himself to his work. A good memory, concentration and initiative are necessary if he hopes to advance in his work. He must seize his opportunities as they arise, and so he should have the faculty of quick observation along with foresight. Tact, alertness, retentiveness, an agreeable personality, correct and easy speech and orderly habits will all help the new secretary. He should be particular about his personal appearance, for careful dress is as essential to his success as good manners.

The relationship between employer and secretary is likely to be intimate and personal and react to the advantage of the secretary, but, unless he is willing to study and work and become more than a secretary, he will quickly reach the peak of his earning ability and become a mere cog in the machine. The secretary can generally, if he is capable, find a position, but if he does not grasp the opportunities to advance, he will always be working at a nominal salary. The success of the secretary most often comes when he does his work so well that he is given an opportunity to step into a higher position for which his secretarial work has fitted him.

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CHAPTER XLI

THE STAGE

The stage, which has become such an essential part of our present-day life, exerts an influence that is as beneficial as it is far-reaching. While its principal function is to amuse and entertain, it is frequently used as a medium for initiating great reforms. Its educational value in presenting historic events and in vitalizing literary classics is well known; and its influence on the public in the matter of speech, dress and manners is equally well recognized. It is true that undesirable plays are sometimes given, and that unworthy actors occasionally disgrace their profession, but these are in a rapidly disappearing minority. The average actor is a hard-working artist, as devoted to his art and the public welfare as the average man in any other profession.

The stage offers varied opportunity to the new actor. The Broadway production, the road show and the stock company, all of which are classed as the legitimate stage, have openings for competent men. The actors who play on the legitimate stage are classified as straight, juvenile, heavy or character actors. The straight actor plays the part of a man of about his own age, the juvenile plays the rôle of a very young man or boy, the heavy usually enacts the villain and the character actor plays the eccentric characters. The comedian, who is really a character actor, plays only comedy parts. Since some actors are capable of playing in only a few types of plays, there are, besides the rough subdivisions of tragedy and comedy, the finer distinctions of high and low comedy. The actor who is clever at burlesquing his part plays in low comedy.

The actor who plays in New York or on the road has his part assigned to him, is rehearsed in it by the director and plays that one part as long as the play lasts. The man who becomes a member of a stock company has a different sort of task, for the usual stock company puts on a new show either every week or every two weeks. He is acting in one play and rehearsing another at the same time, so he must be versatile in order to play parts which may vary in type. The stock company in a thriving city is not only an excellent training school for actors, but it affords permanent work of an attractive sort. The new recruit on the legitimate stage may only walk on in a mob or a ballroom scene, or understudy a prominent character, but that may be the entering wedge for future success.

The little theater and repertory companies are now being recognized as worthy to be classed with the legitimate stage. The little theaters scattered over the country are producing plays that are of unusual caliber and are demanding more than amateur actors. The actor who finds his place in a repertory company has a task similar to the little-theater actor. Such a company produces a number of plays again and again and the actors are very well trained, as the star system is eliminated. The Portmanteau Players, who first introduced us to Dunsany, are a traveling repertory theater and have done a great deal in extending the knowledge of the one-act play.

Musical comedy actors not only play a part but must also sing or dance. Since such an actor attempts only to entertain, he is usually somewhat of a comedian. Vaudeville makes such peculiar demands upon an individual that it is impossible to consider all persons upon the vaudeville stage as actors. However, the short skits or playlets do demand good actors; but because of the constant repetition of the act, the actor often becomes slipshod and loses the zest of his calling. For this reason vaudeville is not a desirable opening for the aspiring dramatic actor. Chautauqua and lyceum work are gradually bringing good plays to even the smallest communities, but the opportunities for the actor in this field are as yet extremely limited.

The silent drama, or the motion picture, is the newest addition to the theatrical family. The movies reach so many hundreds of thousands of people that the opportunities of the screen actor are inexhaustible. He must be an all-around person, able to swim, ride, dance, drive a car or play tennis. His face must screen well and he must be able to act well before the camera. The motion picture is recognized as a vital educational force, and with every year of its growth this force will be of even greater value.

All actors, whether of the legitimate or the silent drama, must have a good general education. They must not have confined their education to dramatic training, although such training is of great assistance to them. They must have a thorough knowledge of English and English literature, for it will be their duty to interpret the plays of the dramatist, and only in so far as they themselves appreciate the play can they give it to the audience. To study his characters well and portray them conscientiously, an actor should have a knowledge of psychology, while a knowledge of history is essential in understanding the historical play with its difficult production. A play such as Drinkwater's "Abraham Lincoln" requires such knowledge on the part of its actors. So many of the modern plays are being translated, especially from the French, that the ability to speak at least one foreign language, preferably French, is an asset to the actor. Since actors are notably poor business men, as a result of over-training on the artistic side, some business training would be to their advantage.

The dramatic school, while not absolutely necessary to success on the stage, is well worth consideration by the prospective actor. Since its function is to discover lack of ability as well as real talent, one or two years of preliminary study at a good school of acting is advisable. David Belasco believes in the dramatic school as a step toward the stage, and it is certain that a thoroughly trained actor avoids several years of hard work. Since the actor must have a trained body, mind and voice, the dramatic school is the logical place to acquire such training. The course of study at the usual dramatic schools includes not only training of voice and body but also courses in literature, foreign languages and oftentimes, music. The constant appearing in plays, either before the school or before outside audiences, increases the student's self-confidence and develops poise.

Some of our great actors never had dramatic school training; so the young man who is unable to attend a professional school need not dispair of becoming an actor. Physical training and training of the voice can be had in almost all high schools and in night schools all over the country. Some actors are college graduates, who never had professional dramatic training, but whose well-organized study in college, in dramatics, oratorical contests and debates, fitted them for the stage.

Schools for the teaching of motion picture acting are not advisable, though the training of a good dramatic school is extremely useful for the motion picture actor. The real school for motion picture acting is before the camera, where the new actor is paid while learning, for he will begin as an extra, and be paid according to the number of days he works.

Real talent will find a place on the stage, and the actor who possesses it, although he may begin as a utility man at about $40 a week, will soon advance to $125 if he is a character man, or $250 if he becomes a leading man. Such figures are only approximate, as there is no uniform scale of wages. In the road companies, the salaries are often lower. Stock company salaries range from $35 to $150 a week, depending upon the part played. A very few actors earn $50,000 a year or over on the legitimate stage, but the much discussed salaries of motion picture stars are often overestimated. Even a good actor will rarely find work for more than thirty weeks of the year, and he may not have more than twenty weeks' work, so it is very evident that the yearly income of the actor will not often exceed $5,000. There are some reputable agents who can be of vital assistance to the newcomer, but the best way to get an engagement on the stage is to interview managers and get to know stage people. A study of stage magazines and attendance at current plays are of importance in order that the aspiring actor may understand the stage itself.

The person who would become an actor must possess the ability of concentration together with a trained memory, for he may have to learn a difficult part in a very short time. He must possess originality as well as a keenly developed sense of observation and sympathetic understanding of human character, so that he may properly interpret the part. Genius is not needed if one has observation and application, for hard work and careful training are the real steps toward success. A good voice and a physically fit body are an absolute necessity to the actor, for they are the instruments of his profession. The actor who desires really to rise must have a genuine enthusiasm for his work, courage to face disappointments and a sense of humor that discouragement cannot efface. Above all, he must have a large capacity for hard work and study.

For the young man who has not only the desire to be an actor, but the personality, pluck and perseverance to adhere to his purpose, the stage offers many advantages. Acting will bring out the best that is in him, but only if he is willing to work hard. He must go into it prepared to meet every situation as a man and not be daunted by any obstacles. There are temptations on the stage, but none that cannot be overcome by the man who is unafraid.

Engagements are often hard to find and they are of a more or less precarious nature; there is a constant nervous strain; a play may fail and all the hard work put into it be set at naught; the actor's working hours are while the rest of the world relaxes; and the study of his part, rehearsals and other duties make heavy inroads on the rest of his time. But despite these disadvantages, there are compensations for the person of ability and character. A comradeship exists on the stage that is rarely found elsewhere; there is opportunity for mental growth; and there is the joy of giving pleasure to others. The motion picture actor must be at the studio early and stay late at night, while the strong lights under which he works are apt to cause eyestrain. The work is hard but ever-changing, and there is every chance for the man in such a position to earn a comfortable living. Whether acting on the stage or for the screen, he must not be content to study a part, and then, thinking that good enough, relax his efforts. Good acting depends essentially on growth, and an actor must always work hard to attain a higher place. As a profession, acting is boundless in its scope; as an art, it is worthy to be ranked with the highest.

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CHAPTER XLII

TEACHING

Next to the home, the school is the most important factor in the development of the character and personality of the child. The influence of the teacher supplements that of the parents, and his function is not only that of instructing the pupil in the various school subjects, but also that of teaching the pupil to know and use his own powers. No work is more important than that of the teacher. Where the schools are good, the average man or woman is likely to be a better individual and citizen than where poor teaching obtains. This is a natural result, for the teacher's opportunity to lead his pupils into channels of right thinking and acting is, in most cases, a great one. It is not the teacher's part to mold his pupils according to preconceived ideas, but rather to stimulate them to react in characteristic fashion to the knowledge imparted to them, and to bring out and develop, through this reaction, their innate capacities. The teacher's work is social service of the highest type—it is the work of producing men and women who will be well equipped to take their places in the life which lies beyond the classroom.

Teaching is one of the least selfish of all the professions. The teacher must always be ready to minister to the needs of his pupils; in the classroom, he must be able to forget private affairs altogether, and to devote himself whole-heartedly to his work. The teacher is called upon to give forth all his knowledge, sympathy and understanding, freely and unselfishly. Service to the pupil, and through him to the community, is the aim of all teaching.

In order to render the best sort of service, the teacher should be possessed of many special qualifications. All the virtues of human character would not be too many for the teacher. But though no one can possess them all, certain virtues and certain capacities must be inherent in the man who is to be a real teacher. Unselfishness and the desire to serve have been already mentioned. With these, should go an interest in people, and especially young people, understanding of them and sympathy with them. The teacher who has these qualities will be able to get along well with those with whom he comes in daily contact. He will be patient with youth, and he will know how to adjust himself to it. An understanding of human nature, reinforced by sympathy, can accomplish far more than a large store of learning backed only by a knowledge of pedagogic principles. Insight, the ability to place oneself in the position of the pupil and to consider things from his viewpoint, will help a teacher through many a difficult situation. Sympathetic imagination and an understanding of human nature will result in the sympathetic presentation of knowledge, which is the only sort of presentation which can be relied upon to make an impression upon the pupil.

The teacher must have a strong personality and possess the qualities of a leader. This does not mean that he must be extremely self-assertive, but it does mean that he should be gifted with the ability to make himself liked and obeyed. Discipline is, of course, an important consideration in teaching, and it is well for the prospective teacher to keep in mind that a class can be best controlled by one who knows how to control himself. Self-restraint is always more effective than a show of temper, and patience will accomplish much more than force.

The power of the teacher to impart knowledge comes, to a large degree, from the qualities of sympathy and tact coupled with the necessary background of learning. The teacher can never know too much. He need not pour out upon his pupils all the accumulated knowledge at his command, but the very fact that he knows more than is absolutely necessary for the conduct of the class will soon be sensed by his pupils. And they will, as a result, have more confidence in him and more respect for him than would be possible if they felt him to be daily coming dangerously near the limits of his knowledge. Knowledge alone is, of course, not sufficient. With it must go the ability to analyze a subject thoroughly and to present it definitely and clearly. A teacher should have, too, a love for study, that he may inspire others with a similar enthusiasm, and that he may have the desire to continue to add to his knowledge of the subject or subjects he teaches.

In general, the duty of a teacher is the imparting of knowledge to his pupils. The work of individual teachers or kinds of teachers varies, however, principally according to the type of school in which they teach and the sort of pupils they instruct. The university professor's duties, for example, are quite different from those of the teacher in the elementary school. The elementary school teacher is generally required to instruct the children in a number of subjects. In the high schools, where the attempt is already made to give pupils fuller knowledge, teachers generally teach but one or two subjects. In colleges and universities the teacher practically always specializes in the teaching of one subject or even of one branch of a subject. In some cases, professors do nothing but lecture to their classes, the questioning and examining of students being carried on under the supervision of assistant instructors.

Teachers in the public elementary and high schools are licensed by the state before being permitted to engage in their profession. State requirements for the certification of teachers vary, but may easily be ascertained by application to the local Board of Education. In most cases, candidates for teaching positions in rural ungraded schools are required to have at least a high school education and, in addition, about a year's training in a normal school, which is a school devoted to the training of teachers. Many rural schools, however, and practically all the graded city schools, require, on the part of teachers, a high school education plus a two- or three-year normal course. In order to teach in high school, a four-year college course, including some training in pedagogy, or else a full normal course is generally necessary. College instructors must, of course, have a college education, and are generally not appointed before they have finished from one to three years of graduate study.

The boards of education have nothing to do with the appointment of college instructors, who are given their positions by the governing bodies of the individual institutions. In the case of some state colleges, however, teachers are appointed by the state Board of Education. Teachers in normal schools are generally college graduates with supplementary normal school training. There are numerous private schools and college preparatory schools, where the work is equivalent to that of the public elementary and high schools. In order to teach in such a private school, the teacher must usually meet the same requirements as for public schools. An instructor in a small private school may have to teach several subjects, but in the larger and better schools specialization is usual.

The tutor is, in most cases, a sort of "free lance"—that is, he is not employed by a school, but teaches individuals privately. He should have expert knowledge of the subject or subjects he wishes to teach and, as his work is often that of helping in their studies those who, for various reasons, are backward in them, he has need of an infinite amount of patience, tact, firmness and self-control. Usually the tutor works with one student at a time, for a period of not more than an hour or two. Some young men tutor while they are still at normal school or college. Provided that they know their subject, and can adapt their teaching methods to the varying needs of the individuals they instruct, they may be as successful as the man with more experience who perhaps tutors in addition to teaching regularly.

There is yet another type of teacher, and the demand for this type is steadily increasing. Many of the larger industrial establishments, mercantile houses and banking houses have established their own schools, where instruction, both academic and technical, is offered to employees. The National City Bank of New York, for instance, has a complete educational system. Instruction of all types, ranging from elementary school subjects for office boys to that of highly specialized technical subjects to fit university graduates for executive positions, is carried on there. The teachers in such schools are generally college graduates and, if they are required to teach subjects of a technical nature, have usually some practical experience as well as theoretic knowledge of those subjects.

Young men who wish to enter the teaching profession have plenty of opportunity for the necessary preparatory study, both in public and private institutions. Every city has at least one public high school, and state universities and normal schools offer courses in academic subjects and in the theory and practice of teaching, to both inexperienced and more mature students. Many young people begin teaching as soon as the laws of the state permit them to do so, and continue their education at a normal school or a university during their summer vacations, or sometimes in the evenings. Many of the large universities maintain schools of education, where pedagogical training may be acquired.

The teacher's work is not easy. The person who enters the profession because it seems to promise short hours and easy tasks is doomed to disappointment. Not only are the hours longer than they seem, because of the hours of outside preparation which the conscientious teacher is bound to make for his classes, but the constant nervous strain makes the smaller number of hours in the classroom more wearing than a longer period of work elsewhere might be.

Teachers have not always been adequately paid, but there has been considerable improvement in this respect within the last few years, and the tendency is still upward. Some rural communities have paid their teachers as little as $300 a year, but in larger places the pay is much better. In most cities, and especially in the larger ones, public school teachers usually work under a fixed salary schedule, which provides a minimum, a maximum and an annual increment. The minimum salary for elementary school teachers ranges from about $1,000 to $1,500 a year, and the maximum from about $1,500 to $3,250 a year. High school teachers receive from about $1,500 to $3,800 a year. The opportunity for promotion to principalships in elementary schools is good, provided the teacher is college-trained and has executive ability. Elementary school principals receive from about $2,000 to $5,000 a year. Principals of high schools receive from about $3,000 to $7,000 a year, and city superintendents up to $15,000 a year and more.

The public school teacher is usually protected by tenure-of-office laws, and so a position for life, with a pension for old age, is practically assured. Teachers in large private and preparatory schools of well-established reputation are generally certain of a fairly good income, and instructors in business houses are usually well paid.

For the real teacher, his work is in itself almost sufficient reward. He finds joy and pleasure in it, though it be difficult and, at times, trying. The true teacher does not find his work monotonous, for if he approaches it in the proper spirit it cannot be monotonous. He teaches, every term, new pupils, and so the knowledge he desires to impart to them may be presented by him from a new angle. He must adapt himself to the students under him, and in so doing he finds in his work a certain freshness and difference which gives him a new interest and delight in it. Then his life among those who are young and enthusiastic serves to preserve his own youth and enthusiasm, if he projects his personality, as he should, into that of his pupils.

The man who takes up teaching gives up definitely all prospects of ever becoming wealthy; but the teacher's life is one which offers such large opportunities for personal influence that it must be an attractive one for the man of high ideals of service. It is a life which should, and often does, bring out a man's best qualities, and which opens up to him a larger sphere of personal usefulness than might almost any other career. The difficulties of the work will be as nothing compared to the pleasure and pride one can take in it, if he is by nature equipped for teaching. An honorable position in the community, a firm place in the affections of many people, a sense of large service rendered to the individual and to society—these are the rewards of the teacher who enters upon his duties as upon a ministry, and who devotes his life to the wonderful work of developing fine men and women.

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CHAPTER XLIII

THE TEACHING OF MANUAL TRAINING AND INDUSTRIAL SUBJECTS

All teaching, all educational work, has for its aim the making of more useful boys and girls, and consequently men and women. Those things which promise to develop to the highest degree the native capacity for usefulness in each individual, those things which will best fit the individual to find his place in the general scheme of society, are included in the school curriculum. For these reasons, reading and writing are the first subjects taught in school, for they form the best means of approach to many sorts of knowledge, and through knowledge, to usefulness.

But knowledge, of the sort which is commonly known to be imparted by the schools, is not the only kind of knowledge which makes for the useful development of the individual. After all, but a limited number of children continue their studies far enough to enter one of the professions, which are based upon continued intellectual effort. Every year thousands upon thousands of young men enter upon the various skilled and semi-skilled trades, which stand behind all industry, commerce, manufacture and agriculture.

The schools have already realized their obligation to these many students, have realized that the traditional academic courses can, after a while, have but little interest for young boys who look forward to entering the trades sooner or later, and in many cases at the earliest opportunity. Realizing that these young students usually have left school with no knowledge of any vocation, and that their lack of knowledge often leads them to choose the wrong occupation, or causes them to see no relationship at all between school work and their life work, the schools some time ago made their first effort to help these students by providing for a certain amount of instruction in industrial subjects.

In the very beginning, when "manual training" was first instituted, its purpose was perhaps more disciplinary than vocational.

That is, it was looked upon more as training for the student in the correct carrying out of various isolated processes than as a possible introduction to the actual processes common to most trades which make use of hand work. The chief value of manual training is its educational one; but it has an industrial value as well. Manual training is not meant to prepare students for any particular trade, but rather to give them a grasp of the underlying principles of all mechanical work. It is intended to provide an approach to industrial study. Through manual training many students receive their introduction to the basic principles which are the foundation of all work connected with the mechanic arts.

Manual training thus serves a twofold purpose. It enlarges the field of education, through presenting to students another branch of knowledge, some slight acquaintance with which, at least, will bring about a better understanding of industrial conditions later on; and it enables the pupil to develop the use of his hands as well as his head. It serves also as a determining factor, in many cases, in the student's decision regarding his future vocational choice. Through manual training, mechanical aptitudes, or their lack, are frequently revealed in the students; and so in this way also manual training serves a distinctly practical purpose. Manual training is the form which industrial instruction usually takes in the elementary school, and in the traditional high school. It has its place also in the curriculum of the prevocational school, and, to some extent, in the normal school and college.

Since manual training is a part of the general educational scheme, having as its main objects the general development of the student's mind and muscles, and the arousing of his vocational interests, it does not require a great amount of specialized trade training on the part of the teacher. It does require on his part a certain love for mechanical work, an appreciative understanding of industrial life and the common industrial processes, and the sort of personality which will impress and influence young boys. This means energy, enthusiasm and the ability to obtain the confidence of pupils and to keep them busy and interested in their work. Added to these qualifications should be teaching ability and training for the work of teaching. It is usual for the would-be manual training instructor to go through high school, and then to take a normal school course of from one to two years' duration. In the normal school, he is instructed in the principles of manual training and in the principles and methods of teaching. Besides the normal schools, many of the state universities give courses in manual arts for teachers Some of these courses are not open to students without some previous college education but, in other cases, shorter courses, open to men with only partial high school education, are offered.

Since manual training is concerned not with the teaching of particular trades but with an introduction to the fundamentals underlying numerous hand processes employed in industry, the manual training teacher need not have as much actual trade experience as must the teacher in more strictly industrial classes. However, even for the manual training teacher, a certain amount of practical shop experience is desirable. It gives him a better insight into the processes he wishes to teach, a broader viewpoint, a fuller realization of the benefits of manual training and, above all, more authority in dealing with his subject and with his pupils. Children are quick to sense the self-confidence or lack of it in a teacher, and for this reason alone, if for no other, some shop experience is of great value to the manual training teacher.

The next step up from manual training is prevocational work. In reality, manual training is a part of prevocational training, which is simply education of the sort which will lay a good foundation for later more definite vocational courses. Manual training offers students practice in hand work of various sorts, such as might be encountered later in studying trades. Prevocational education attempts to convey to the children a certain amount of information about industry in general, and to give them a taste of various trades. The work in the prevocational class is more varied and more individual than that in the manual training class. In manual training, the entire class is usually set to work to solve some one definite problem, through drawing and construction. In prevocational work, the elementary processes of a number of industrial occupations are taught, and the natural aptitudes of each student considered, in assigning constructive work to him.

The prevocational school is open to boys below or above fourteen years of age, and does not close the way to the further education of these students. The shopwork is an important feature, of course, but bookwork is not neglected. However, the bookwork also has an industrial trend—the subjects taught, mathematics, geography, English and others, are taught in such a way that their connection with industrial pursuits is manifest to the children.

The bookwork or academic teacher of a prevocational class needs, more than long academic training in the principles of teaching, a sympathetic love for children, a broad outlook, the ability to work in close cooperation with the shopwork teacher and the ability to make the subjects he touches upon of vital interest to pupils, by correlating these studies with their shop interests.

The shopwork teacher should above all else be a man with real trade experience. The more varied and thorough such experience has been, the better. The shop teacher in the prevocational school is called upon to introduce the pupils to a number of trades. For this reason, he must be interested in constructive problems in general, and not merely in one special line of mechanical effort. Unless he is a thoroughly competent craftsman, he will be unable to keep his classes well under control, and, without a good deal of resourcefulness and sympathetic imagination, he will hardly be able to cope with the problems which will be sure to arise in the course of his daily work.

It has been found that men with trade experience; with the ability to explain the processes whereby simple operations are performed; with cheerful, energetic, confidence-inspiring personality; men who are not too critical nor apt to set too high standards for amateur work may be turned into very capable shop teachers. In order to obtain shop teachers who will combine industrial experience with some teaching knowledge, short courses are offered by some school boards to give local industrial workers some knowledge of the essential principles of teaching. These courses consist, usually, of a certain amount of reading, of lectures by the principal of the school or perhaps by the director of vocational education, and of some practice teaching. A number of universities and other schools also give short courses, often in the evenings, to train prevocational shop teachers. These courses will be more fully discussed later.

The manual training in elementary and high schools, and the courses in prevocational schools, are meant simply to serve as an introduction to the world of industry, to reveal to the child the world of work, and to make him aware of the possibility that his own vocation may lie in one of the trades. There are a number of different types of schools, which have as their purpose the training of workers who have already chosen their trades, and who wish to gain either elementary or more advanced instruction in the processes of those trades.

The first of these schools is the continuation school. The continuation school may be either a trade-continuation or a general-continuation school. In either case, the students are young people who have already entered upon some trade, and who give part of their working time to school. In the case of the trade-continuation school, trade education is the principal thing. Students either study the processes of their own occupations further, so as to attain greater efficiency, or begin the study of altogether different trades. In the general-continuation school, stress is laid not only upon industrial training, but upon the general education of the students.

What the continuation school does to a certain extent, the trade school does much more thoroughly. There are two chief types of industrial schools which offer all-day courses for the purpose of training industrial workers. The first type is the unit trade school, in which one certain trade or branch of a trade is taught. In such a school, specialization is the rule, and the teacher must be expert in the particular trade he is to teach, and must, in addition, have some general understanding of related subjects. The second type is the vocational, or the general industrial, school. Here, different trades, or related trades which form one industrial group, are taught. Teachers in the general industrial school must, like those in the trade school, be thoroughly experienced in one trade and, in addition, have some knowledge of related subjects.

Three types of teachers are usually needed in the continuation, trade and vocational schools. They are the trade, the technical and the non-vocational or academic teachers. The present discussion is concerned with the first two types only. The trade teacher is, of course, the shop teacher, whose duty it is to give instruction in the manual part of the work—in shop practice. In the case of the shop teacher, actual mastery of the particular trade taught and real industrial experience are absolutely essential. The trade teacher must be a skilled and thoroughgoing workman, with knowledge not only of the mechanical processes of his own trade but with a thorough acquaintance, also, with its related subjects, including shop mathematics and shop drawing.

The technical teacher or teacher of "related subjects" must also be considered as an industrial teacher, for he gives instruction in subjects that form part of the trade knowledge. Chemistry, physics, drawing and other such subjects, some knowledge of which is necessary in certain industrial occupations, come under the heading of "related subjects." These studies are always adapted to the particular occupation taught in the school, and have, therefore, a distinctly industrial character. The technical teacher needs much the same personal characteristics as does the trade teacher, but he does not need equal industrial experience. He should, however, have thorough technical training in the subjects he is to teach.

Instruction in trade subjects in industrial and technical high schools differs somewhat from that offered in the schools whose chief aim is trade education. The broader educational background of high school students admits of their undertaking more technical studies; and so the scientific and mathematical principles of the trades, and the application of these principles to actual industrial work, are more fully gone into than is the case in schools of lower rank. But seldom do the technical high schools prepare pupils for any definite trade. Their purpose is, rather, general education which will take some account also of manual and technical processes connected with industry. Shop teachers in the technical high schools should, like those in the lower grade industrial schools, be men of sound mechanical knowledge and industrial experience.

The teaching of trade subjects in normal schools and colleges is usually quite different from the teaching of similar subjects in industrial schools. The reason for this is not only that the students have a greater amount of education, but also that the purpose of the trade courses is a different one. Trade subjects in normal schools and colleges are given, usually, as part of the preparation of future manual training and industrial teachers. For this reason the instructor in the normal school needs a somewhat different equipment from that of the teacher in the trade school. A thorough grasp of the principles of pedagogy, and the power to analyse industrial processes and to teach his pupils the fundamentals of these two branches, are essential. Added to this should be a broader technical training than is necessary for the shop teacher in an industrial school. The instructor should have some general industrial experience, but he does not need the practical trade experience that the ordinary industrial teacher ought to have, since he teaches not so much the trade as the way in which the trade should be taught.

In one other way is industrial knowledge imparted. This is through training courses offered in the industries themselves. Many firms train their own workers, because the specialized processes of the industry make this necessary. Others train workers because there are not yet sufficient industrial schools to afford an adequate supply of efficient men. In the apprenticeship and short training courses offered in the industries, men who have shown trade and executive ability in combination are frequently selected to act as instructors. These men are usually given a brief preliminary training in the methods of teaching industrial practice, and are then set to work in the firm's school.

Teachers in corporation schools must first of all be masters of their trade, and know how to get along with other men. They must have authority, confidence, patience, the ability to make clear the processes they are teaching and the ability to make the boys and men respect them and take their teaching seriously. No man academically trained alone could ever satisfactorily fill such a position. First-hand knowledge of the trade, and as complete as possible, coupled with that understanding of industrial conditions which comes from real experience are absolutely essential for successful work on the teacher's part in the corporation schools.

The qualifications of industrial teachers of practically all kinds may be summed up as follows: They should have a knowledge of the trade to be taught, the ability to teach it and the sort of personality that will bring out the best efforts of those who are being taught.

Knowledge of a trade, of course, comes best through working in it. Personality is largely a matter of one's character and one's willingness to learn. The man with a good foundation of trade knowledge, who is pleasant and cheerful in his contact with others, neat and clean in appearance, of good habits and with the ability to supervise the work of others usually makes excellent material for an industrial teacher. All he needs to complete his equipment is some training in the teaching of his subject. This training has not, until very recently, been easy to acquire. Training courses for industrial teachers are comparatively new. It is only now that schools are beginning to realize the fact that the academically trained man, whose entire trade experience is limited to that obtained in the school shops, is hardly a logical instructor in a trade or general industrial school. It is the man with practical experience who seems to be the most fitting candidate for trade-teaching positions, and a growing acknowledgment of this fact has led to the establishment of a number of courses designed to train capable workers to become trade teachers.

The most practical courses offered such workers are those given in the evening, since men employed in an industry have no time for attending day classes. These courses are usually of short duration, aiming to give the students intensive instruction in the fundamental principles of teaching and to provide them with an opportunity to spend some time in practice teaching. These courses make no attempt to teach trades, but simply to train vocational instructors. Men admitted to these courses are expected to have at least an elementary school education or its equivalent. If they have high school training also, so much the better. They are required also to be men of good personality, and with practical experience along the lines of the industrial work they desire to teach. A number of local industrial schools also offer similar short instructor-training courses to men with trade experience. Information regarding such courses may be obtained from your state or local Board of Education.

There is an active and constantly growing demand for men who combine trade experience with teaching ability. Such men are wanted in all the types of schools mentioned. There are as yet but very few who are properly equipped to undertake industrial instruction, and so there is a large uncrowded field for capable men.

There are other courses, which have as their purpose the imparting to students of both trade and teaching knowledge. These courses are, of necessity, much longer in duration than the short specific evening classes conducted for workers. They are generally all-day courses, lasting from two to four years, and are given at normal schools, state universities and technical schools. They attempt to teach trade processes and to give also, professional teacher training. These courses generally have one fault—they do not offer real trade experience. If students work at a trade during their summer vacations, this lack may be overcome. These courses are open in most cases to boys with a high school education. Graduates of such courses are competent to hold manual training positions, or, if they have supplemented their school work with practical shop experience, they may make good industrial teachers in trade schools and technical high schools.

Training courses for manual training teachers are offered by many normal schools and a number of colleges. These courses, too, are generally at least two years long, and are open usually to high school graduates. The training is quite academic, offering but a limited amount of practice in the manual arts, and fitting students for work as manual training teachers in elementary, high and normal schools.

Combined instruction of trade, technical and professional types is offered by a number of institutions, some of which give both day and evening courses, of the intensive and also of the more prolonged sort. These institutions train regular students and also, in some cases, men who are already employed and who wish to become shopwork teachers. They are generally technical schools of secondary grade, or higher, and in many cases offer excellent preparation for the prospective industrial teacher.

The young man with an elementary education, a love for mechanical work and the desire to become an industrial teacher often does well to enter some such technical school, where, in the course of two, three or four years, he obtains a fair amount of technical and professional training. The young man who is already employed in a trade will find the short courses offered by such technical schools, by local public industrial schools, by university extension departments and by the large corporations of the industry in which he is engaged very valuable in preparing for teaching work.

To some young men of executive ability and of thorough pedagogic training the position of supervisor or director of industrial education will offer a strong appeal. Such a position entails considerable responsibility and is usually open only to teachers of experience. It is the duty of the director of industrial education in a town or city to provide for a system of courses in trade training and trade-teacher training. He must make this system part of the educational and industrial life of the community, a force whose influence is clearly felt and appreciated. In order to do this, the supervisor must be able to keep in close and friendly touch not alone with school authorities but also with the business men of his community.

The supervisor and the director of industrial work plan courses, supervise the teaching staff and are more or less in charge of all or part of the industrial education of the city or school. Their work requires executive ability, great tact and a sound appreciation of the meaning and value of industrial education. Supervisors and directors are usually normal school or college graduates, but some of the best in the country today are men who came right out of the shops, and who, by dint of superior ability, hard work and the right kind of study after school hours, have made enviable names for themselves in the teaching profession.

For the young man of mechanical tastes and good personality, industrial teaching offers a splendid field of employment. It is a profession which has until now been hardly recognized, and which, coming into greater and greater prominence, offers the advantage of a steadily growing demand for capable men. The pay is usually better than that of a man engaged at the actual work in the trade, and the greater amount of leisure, due to lighter hours and long vacations with pay, gives the teacher much opportunity for rest, recreation and self-improvement. Like the academic teacher, the industrial teacher usually works under a fixed salary schedule, which includes a minimum and a maximum salary and an annual increment. The salaries vary in different communities, but the minimum is usually about $1,500 a year, while the maximum salary in the large cities reaches up to $3,250 a year for elementary schools, and $3,800 a year for high school teachers. The beginner usually starts at the minimum salary, but sometimes receives credit for outside work, which may raise his initial salary considerably. After appointment, an increase of from $100 to $200 a year is generally provided for, until the maximum salary is reached. Employment is usually for life, with a substantial pension for old age.

The work is, to the right type of man, very pleasant and interesting, giving him, as it does, an opportunity to exercise his executive faculty and his mechanical ability. It is, furthermore, work whose usefulness cannot be overestimated. To help develop more useful men and better citizens, is a great privilege. Every year several hundred thousand children leave school before they have finished the elementary grades, and with no proper preparation, attempt to enter industrial life. In many cases an adequate system of vocational instruction would keep these children in school a few years longer, prepare them to be of real use when they are ready to go out into the world and increase their earning power, their self-respect and their general intelligence and happiness. Where the system of industrial education is worked out so that these results are in some measure accomplished, the industrial teacher can feel that it is largely through his efforts that this is true. His work is that of preparing, for effective citizenship and useful living, the great mass of our future working population.

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CHAPTER XLIV

TELEGRAPHY

Since the invention of the telegraph, the world has come to be a smaller place. People separated by thousands of miles have been enabled to communicate with each other in a marvelously short time. One hemisphere no longer feels its isolation from the other; continents are linked to one another; countries which are separated from each other by thousands of miles of land and water can learn of the same important happenings at almost the same moment. Ships in midocean need never be out of communication with land; aviators far up in the clouds can report what they see to those miles below on the ground; a train hurrying to the Pacific Coast may be controlled from an Eastern office. All these things have been made possible through the agency of the telegraph and wireless telegraph and by the yet newer wonder, the wireless, or radio telephone.

The telegraph operator is the man through whom the speech of dots and dashes is carried on. His is the responsibility of conveying whatever messages he may be instructed to transmit or which he finds it necessary to send. A telegrapher employed by a commercial telegraph company sends only such messages as customers desire. The telegrapher on a ship, and sometimes the railroad telegrapher, sends not only such messages as he is ordered to, but also such as may be necessitated by the demands of his work, or by unexpected happenings.

The ship telegrapher is a vessel's main hope in case of accident. He sends out calls for help, making these calls very urgent or modifying them, according to the extent of the danger. Many a heroic telegrapher has saved a ship by sticking to his post in time of extreme peril, sending out calls, giving full directions as to the whereabouts of the ship and thus making it possible for other vessels to approach and render assistance. Train wrecks also have often been avoided by the quick wit and speedy action of telegraphers who have prevented the collison of trains or their passing over spots rendered dangerous by storms.

Commercial telegraph companies, ships, railroads, newspapers, mines, life-saving stations, private financial and commercial concerns, military organizations—all utilize the telegraph and, to an ever-increasing extent, the wireless telephone. Competent operators are needed for both the telegraph and wireless telegraph, and to a lesser degree for the radio telephone.

No high degree of education is necessary for one to become a telegraph operator. A common school education is considered sufficient, though the young man who has gone through high school or college has often a better chance of advancing to a higher position. The prospective telegrapher must learn how to send and receive messages accurately and with the required speed, and should also know something of the fundamentals of the theory of electricity. He must also know how to handle and repair the apparatus with which he works. This is especially necessary for operators in isolated spots and on ships, where defects in the instruments must immediately be recognized and remedied, and where the operator himself must usually do the repairing.

The practical operation and handling of the apparatus, knowledge of the code used in telegraphy, skill in the manipulation of the key and general proficiency in telegraph or wireless practice can be obtained in several ways. One of these is through taking a course at a telegrapher's school, and another, through study at home. Probably the chief advantage of a school course is the fact that it forces the student to engage in systematic and continual practice in code interpretation and key manipulation. The person who makes up his mind to devote a certain amount of time daily to practice can, however, become an efficient operator without attending a school. The many "radio amateurs" in the United States, a very large number of whom are young boys, have practically all learned how to operate the wireless telegraph, repair it and even install it, without formal instruction.

A young man who has been trained at a school, or who has trained himself to operate the telegraph, can obtain a position with a commercial transmission company, with a railroad or with some concern operating private wires. His work consists of receiving and sending messages, of putting them into the proper shape for delivery, in some cases of repairing his apparatus and sometimes of special duties connected with his position. A railroad telegrapher, for instance, sometimes operates signals in addition to this other work. A commercial telegrapher must compute the fee on each message sent, and must know how to carry out the general office duties which may be allotted to him.

Railroad telegraphers have excellent opportunities for advancement. Operators at small stations have in many instances succeeded in working themselves up to the position of chief division operator, and finally of chief train dispatcher. The chief train dispatcher is a very important official. He directs the running of trains in the proper order, through messages to division, and thence to local, telegraph stations. Commercial operators also have good chances to attain higher positions. Many of the highest executives in the telegraph companies have risen to their responsible posts as a result of work well done while they were telegraph operators.

Alertness, carefulness, accuracy and a thorough knowledge of telegraphy are sufficient equipment for the operator employed by commercial telegraph companies, but the railroad telegrapher who desires to succeed should have certain further qualifications. He should be capable of meeting unexpected situations coolly and with good judgment, and of taking immediate action of a decisive and proper nature.

The greatest field for wireless operators lies in nautical work. Every passenger ship is compelled by law to carry at least two operators, and the majority of merchant ships also have a telegraph office. The ship telegraph operator receives messages and sends them from the ship to shore and to other vessels; in some cases gets up a daily paper, with the aid of news items received from land stations; communicates with the ship's owners in case of delay, or when a change of route is considered necessary; and informs the owners of the ship's approach to land, so that docking facilities can be arranged for. As has been said, his work in time of danger is often invaluable, and at all times his presence means that the ship is never in absolute isolation. The mere fact that it is possible to communicate with other ships and with land, either directly or through relayed messages, gives to passengers on vessels a sense of security which they might otherwise not feel.

Wireless telegraph operators are all licensed by the government before being permitted to practice their profession. In order to obtain a license one must be able to pass examinations designed to test one's ability to send and receive messages at a specified speed, and to explain, operate and repair the apparatus employed. Unlike the wire telegraph operator, the wireless man must have a thorough knowledge of the construction and operation of his apparatus, in every detail. The license granted indicates the degree of professional knowledge and skill possessed by the operator.

Wireless telegraphy may be studied at a school, at home or in apprenticeship. Students may become apprenticed to licensed operators, and may learn wireless telegraphy by actual operation of the apparatus, under the supervision of an experienced man. Many professional wireless operators first became interested in the wireless telegraph as a pastime, and perfected themselves in its operation, alone, or with the help of friends or "wireless clubs." The amateur radio operator has a good chance of ascertaining whether or not he will make an efficient professional operator, and of testing his love for the work.

Radio operators on ships are paid from $100 to $125 a month, and receive the accommodations and maintenance accorded to a ship's officer. The life is quite a pleasant one—they visit foreign lands, travel in comfort and are under really serious strain only in times of danger to the ship. Then they are called upon to display their resourcefulness, loyalty, courage and their devotion to duty.

Wireless operators are employed in various other positions. There are the lonely telegraphers who man the isolated northern shore stations with which liners in midocean can communicate. These men must be as alert, accurate, courageous and as devoted to duty as are their fellows aboard a ship. Often they are obliged to live alone for many months, and practically their only recreation at such times is gossiping by wireless with friendly operators far away.

Newspapers make extensive use of the telegraph, and employ operators to send reports of conventions, sporting events and other such happenings to the home office. This work is, however, being done more and more frequently through the radio, or wireless telephone. The opportunities for professional work along the lines of wireless telephony differ from those in wireless telegraphy. No skilled operators are needed—there is no code to learn and no keys to manipulate. But the work of installing and repairing wireless telephones does, however, offer a field for trained men.

The wireless telephone is coming to be used in a great number of new ways. Forest fire patrols make use of it in reporting blazes sighted at a great distance either from an aeroplane or from an observation station upon a mountain top. Fire chiefs issue orders to their subordinates by means of the radio phone. Reports of weather conditions are sent out to farmers from government meteorological stations by the same means. Railroads, too, are using the radio telephone in many cases where the telegraph was formerly the means of communication.

As the use of the radio phone increases, there will be a larger field for skilled men to install radio apparatus. For such men, mechanical ability, a practical knowledge of the principles of electricity, and the ability to do a workmanlike and thorough job are essential requisites. The work is well paid, and may lead to the larger field of telegraph engineering, which is open to the man of ability.

The telegrapher fulfils a very important function in whatever type of organization or endeavor he is employed. With his help, the world is indeed girdled by man. He may not win high financial reward from his work, nor may he, in most cases, gain special recognition for his particular services, but he can have the satisfaction of knowing that through his work, the machinery of our lives runs a little more smoothly and efficiently.

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CHAPTER XLV

TRAFFIC MANAGEMENT

One of the newest professions, and one which is essentially characteristic of the present day, is that of traffic management. This profession is a direct result of present-day, large-scale production, and of the complicated and extensive railroad system by which so many of the products of manufacture are distributed. The need for traffic managers in industry arose from several facts. The growing complexity of the railroad routing and rating systems made necessary some expert, qualified to deal adequately with these matters as they apply to the distribution of goods by industrial concerns. The increasing number of governmental regulations dealing with freight shipments and tariffs has been another factor which has given rise to the need for expert traffic managers.

The traffic manager's duty is to see that products are moved from one place to another by the very best means, which may be taken as meaning in the safest, quickest, cheapest and altogether most serviceable and convenient way. This is but a very broad and general statement of what the traffic manager accomplishes. The actual duties connected with his work are many, and often of a highly technical nature. The traffic manager's work is by no means simple; it is not merely a matter of seeing that goods are transferred from one point to another. It is a matter of studying the output of a firm from the transportation viewpoint, and of so proceeding in the administration of the specific traffic problems that the industry's transportation costs may be reduced to the very lowest possible figure.

In attempting to fulfil these large functions of the position, the traffic manager must undertake various sorts of work, and approach his problems from various angles. His first duty is considered the "classification of line." He must, before anything else, analyze the firm's output as it affects the transportation of the product. Such matters as the amount of output, the character of the product—whether it be bulky or of small dimensions, light or heavy in weight, fragile or unbreakable—are all important considerations. Then the style of packing for the various types of articles to be transported must be decided upon, and here not only convenience and economy but legal regulations, too, must be considered. Certain products are supposed to be packed in a certain way. In the case of others, the traffic manager decides whether boxes or wrappers, crates or barrels, are more suitable and at the same time economical. Then the traffic manager standardizes the descriptions to be used on the various commercial papers, to conform with the classifications established by the railroads or other carriers.

The traffic manager also makes a close study of routes. He considers the railroad routes not only from the standpoint of distance covered but also takes into account the large centers through which the road passes, the number of days or hours it takes to transfer goods from one point to another over a certain route, the number of times goods must be transferred from one train or branch road to another, and the general excellence of the service given by the particular railroad under consideration.

Closely connected with this analysis of the firm's output and his investigation of routes is the study of rates. The rates charged for the various classifications of goods must be thoroughly studied and, if the traffic manager finds discrimination against some types of goods, it is his duty to attempt to remedy this, through an adjustment directly with the carrier, or through the intervention of a federal or state utility commission. The traffic manager must also keep himself thoroughly posted on existing tariffs. A close study of tariffs will enable him to see that the industry adjusts itself to impending changes in tariffs or regulations affecting its products, and so avoid loss upon future deliveries called for by contracts.

The proper adjustment of loss and damage claims, the tracing of delayed shipments, the keeping of accurate car records, the checking up of freight charges, the supervision of local transport (utilizing the services of teamsters and truckmen), the preparation of bills of lading and other commercial papers, the presenting of evidence and exhibits to public utility commissions in case of rate disputes, the keeping of exact accounts—are all duties of the traffic manager and his assistants. These assistants are tariff clerks, rate clerks, accountants, auditors and other such specialized workers.

The man who can successfully carry on the many varied duties of the traffic manager, never losing sight of their importance and meaning, must be a man with a rather unusual equipment. He must be a man of keen and analytical mind, unusual executive ability, broad vision, sound judgment and with a capacity and willingness to meet new problems daily. The knowledge he brings to his work should be broad and varied, and with it should go a desire to keep on acquiring knowledge, for there is always something new for him to learn.

The very nature of his work means that his education is never completed. However, before he is competent to begin his work, he must have a very intimate knowledge of certain matters. He must be thoroughly acquainted with manufacturing processes and manufacturing costs, and with commercial customs and conditions throughout the world. He must know as much as possible about rates and tariffs, their construction and applications, and the principles underlying rate construction and freight classification. He should also have some knowledge of commercial law, since much of his work is influenced by this, and he should have as comprehensive a knowledge as possible of railroads in general and government regulations applying to railroads. It will be seen, then, that the competent traffic manager must be a highly trained man, and a man who possesses the mental attributes necessary for the pursuit of practically every profession.

The field is so new and so few adequately trained men have entered it, that there are practically unlimited opportunities for the well-prepared and capable man. There are thousands of industrial concerns for whom the transportation problem is a vital one. Those who have realized this fact are on the lookout for efficient traffic men. Those who have not yet come to a realization of this new profession's importance will no doubt do so eventually. And so the field is not only new, but it is also large and uncrowded. The work, while it requires constant study and continued effort, is, to the right type of man, very interesting. It gives him opportunity to do useful work of an extensive type, and offers good financial reward. The salaries of traffic managers in large industrial concerns are high, and besides, the position carries with it prestige and influence in the firm.

Traffic managers in industry are concerned with buying the services of railroads. Traffic managers employed by railroad companies are concerned with selling service. They go after business, through solicitation by agents and through advertising. Their work is in some respects similar to that of industrial traffic managers— they, too, are interested in routes, rates and tariffs. But of course, they always see the opposite side of the industrial traffic manager's story. The latter works for the benefit of the shipper, while the railroad traffic man works for the benefit of the carrier. He must bring to his work the same sort of knowledge with which the industrial traffic man should be equipped. Besides this, he should have a thorough railroad experience—that is, know general railroad conditions at first hand, and be especially familiar with his own road. Previous experience as a railroad man will be very useful to the railroad traffic manager, as this will give him a more adequate understanding of shipping problems.

The railway traffic manager should be endowed with a large amount of tact and the ability to influence clients favorably. Questions of service, of adjustments, of claims will arise which will necessitate that he exercise almost equal degrees of firmness and diplomacy. He will have to placate dissatisfied customers, and at the same time make only such concessions as the road can profitably grant. The work requires a man who knows how to deal with people in such a way that both they and the road will be satisfied.

In most cases, railroad traffic managers are trained chiefly in the school of experience, rising to their position from a humbler one in the ranks of railway employees. Sometimes they are men with a college or technical education, who have received some supplementary training in the railroad schools, and have advanced with comparative ease to the position of traffic manager. Often they are men who have started as trainmen and have advanced through ability and training also in the railway school.

Heretofore, many industrial traffic managers have been drawn from among those employed by the railroads. Such men have had to readjust themselves to the different conditions imposed by their new work. They have had to reverse their viewpoint—to look at things now from the shipper's side, instead of from that of the railroad. If a man can successfully adjust himself to the requirements of his new position there is no objection to taking him out of railroad work and putting him into the industrial field. However, as the profession continues to gain recognition, there is no doubt that the increasing number of men who enter it will make it unnecessary for industry to rely upon the railroads to supply it with traffic men.

A third prospect is open to the aspiring traffic manager. Instead of working for one firm or one railroad, he may be employed to supervise the transportation problems of an entire community. Where a community is engaged, for the most part, in one pursuit, as the raising of cotton, grain or some other agricultural product, or in manufacture of various kinds, a transportation manager who will look out for the common interests and solve the common problems of all the shippers is sometimes employed. Such a man must possess the highest type of executive ability. He must be able to cope with large problems. His work can have results of the greatest importance. In many cases, the marketing problem seems to farmers to be one almost incapable of solution. Farmers all over the country are greatly handicapped because they do not know how to overcome transportation difficulties. A well-trained traffic manager might very often be able to suggest ways and means of reducing transportation costs and of securing better transportation service.

Whether the traffic manager is employed by an industry, a railroad or a group of industries or a community, his work remains of the greatest importance. The distribution of goods at a minimum of cost and with a maximum of speed, safety and general convenience means decreased expenses and increased profits for everyone concerned. Especially in a country as large as ours, where goods must be transported over such large areas from the points of production to those of consumption, the traffic manager is a most necessary and influential worker. It is in his power to increase very materially the prosperity of the nation, as well as its comfort and convenience.

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CHAPTER XLVI

TRANSPORTATION

All over the United States there stretches a network of railroad tracks which connect one coast with another, and which pass through huge cities and tiny villages, and over mountains, plains and uninhabited desert regions. The railroad is one of the most romantic accompaniments of our present civilization. Where a railroad has been built, there a greater amount of comfort, more of the conveniences and luxuries of civilization and increasingly higher standards of living are almost sure to follow. Today people are so used to the many comforts and conveniences which the railroads make possible, that they hardly appreciate the extent to which they are indebted to the railroads for them.

The organization of the railroad lines is, of necessity, a very complex one. The transportation of so many people, and of such great amounts and variety of freight, calls for a system which is thoroughly worked out to the least detail, and which is carried out with the highest degree of efficiency. So much depends upon the railroads that the most rigid exactness is essential in every department. The slightest mistake of the humblest employee may destroy the value of costly shipments, or may endanger the safety, or even the lives, of hundreds of human beings. For this reason the railroads exercise all possible precautions in employing men, and for this reason, too, the man who enters upon railroad work in any capacity whatsoever must be constantly alive to the great responsibility which his work entails.

What the great railroad companies undertake is really a stupendous task. The work involves first of all the building of the roads. This means engineering work of every sort. Routes must be planned; land must be acquired and surveyed; rough and uneven grades must be leveled, mountains tunneled, water bridged, embankments built. Then the tracks must be laid, signals and signal stations erected, stations and city terminals built, roundhouses, freight yards and machine shops finished.

All the rolling stock—engines, cars, trailers—must be constructed or purchased. And, finally, the equipment acquired, men must be trained to run the trains safely from division to division, and so over the whole route the railroad follows. Connected with this phase of the work are such matters as the accommodation of passengers, the handling of freight, the actual operation of the locomotive and all the accompanying duties. And then the business records of this immense and complicated system must be kept, legal matters attended to and the general organization and administration of the business and transportation ends adequately planned and supervised.

A system which involves so many different types of work can, of course, make use of practically every sort of ability. Men trained in engineering, law, medicine and accounting are all needed. The work of such men, while it is subject to the special conditions which the railroad business imposes, closely approximates the work of their professional coworkers in other lines.

There are, however, certain types of work which are peculiar to the railroad, and these will here be discussed. The organization of every large railroad may be considered under three principal divisions, and the various employees may be grouped in some one of these. These broad general divisions may be called the operating, the transportation and the business departments.

The operating division is concerned with the actual maintenance of equipment. The department for the construction and maintenance of the roadway, and that for the care and operation of the machinery, are its principal subdivisions.

The construction of roads, and their rebuilding and repair, are, of course, important parts of the work done in this division. The men doing this type of work are usually very highly skilled professional engineers, who plan and supervise the road building and repairing, and unskilled laborers, or "section men," who are engaged in the necessary manual labor. Men who begin as section or repair men have a chance to advance to assistant and then full foremanships. The men who do bridge repair or concrete work, or work upon the buildings, have a chance to acquire a certain amount of technical knowledge, and so perhaps to rise to a higher position.

The work of section and repair men is very hard physical labor and requires a robust physique and strong constitution. It offers fairly good opportunities for advancement to the man with some supervisory ability, and as good pay as can be expected for this type of work.

The engineers, both the engineer-maintenance-of-way, who heads the work of this department, and the chief engineers of the divisions under him, are executive officers of thorough professional training and adequate experience. Under them work the civil engineers and surveyors, who carry out the orders of their superiors, and who, in turn, direct the work of the unskilled laborers and their foremen.

In the operating division may be placed also the machinery department. Here, in the great shops and railroad yards the rolling stock is constructed, repaired and generally cared for. The head of this department is the superintendent of motive power, who is in general charge of the work done in constructing cars and keeping them and the locomotives in good condition. More directly heading the personnel of the machinery department is the master mechanic, who actively superintends the work of the carmen and mechanics.

The carmen carefully inspect the cars, both during their stops in the course of runs, and when they are taken to the car yards at the end of a trip. If anything is amiss, these workers repair the damage. The inspection of the cars must be very thorough, for a slight defect, if overlooked, can precipitate a disaster. And the repair work must be equally well done. The carmen must, therefore, be skilled workmen, who are able to see faults when they come upon them, and to remedy these in a highly efficient manner. Other skilled workers are employed as roundhouse men and mechanics. When the locomotives are housed in the roundhouse at the end of a run, they are carefully gone over by the roundhouse men, and repaired by them with the help of machinists, boilermakers and other such skilled workmen.

Besides the men employed in the shops, there are, also under the supervision of the superintendent of motive power, those who attend to the actual operation of the engines. The engineers and their firemen are the chief workers operating to move the train from point to point on its run. The engineer runs the engine, but that is only one of his duties. When he first reports for work, he carefully inspects the engine to see that it is in good working order. While running his engine, he must regulate his speed according to varied conditions, operate the brakes and keep alert watch for the many signals on the way. At the end of his run, when he has taken the engine to the roundhouse, the engineer again gives it a general inspection, and before leaving he reports whatever work there is to be done upon it.

The fireman's principal duty is attending to the fire in the engine furnace, and in addition to this he must observe the signals displayed along the way and report these to the engineer. If the engine has an automatic stoker he must regulate this properly; if it has not, he must shovel the coal into the furnace by hand.

The transportation division is under the general supervision of the trainmaster, who has charge of the moving of passengers and freight, and who gives the men their work assignments. The workers under him may be classified as yardmen, trainmen and telegraphers. The yardmaster and switchmen make up the trains, switching the cars onto the right tracks and coupling them. The conductor, together with the engineer, is responsible for the operation of the train, and is its superior officer in the course of the run. Much of his work consists of report making. He reports on the cars handled, the tickets collected, on the time record of the train, on accidents, on mileage and other such matters. If he is a freight conductor, he takes seal records of the car doors, and makes note of the contents of the cars. In this work he is assisted by the brakemen. During the train's run, the brakemen attend to the brakes, help stop and control the trains and display train signals.

The telegraph department is an immensely important one. With its help, trains are run in the proper order, the great complicated system is kept smoothly working and accidents and wrecks are avoided. The train dispatcher issues his orders to the various local operators, who, in turn, notify towermen and other signalmen of them. The train dispatcher's work requires the capacity to deal quickly and well with unexpected and often serious situations—in other words, a combination of coolness, resourcefulness, alertness, good judgment and quick action. These same qualities are needed in lesser degree by the local operators, and they should also have a thorough knowledge of telegraphy and railroad signaling.

In the transportation division may be placed also the traffic subdivision, under the control of the traffic manager. This division undertakes to sell railroad service. In the passenger department are the station agents, who sell tickets, and in small towns attend to the baggage. The district passenger agents keep themselves well informed on general traffic conditions in their divisions, make special arrangements with large parties desiring transportation facilities, make plans for increasing the business of the road and advertise its service. The men in the freight department plan routes and routing methods, and do other work of a technical nature.

In the business division, accounting, auditing, secretarial work, legal work, and other types of work requiring professionally trained men, are carried on. These men must have much the same knowledge and qualifications as their brother professionals who work in other fields.

Railroad workers who are engaged in skilled labor or in the technical work connected with the operating of trains and the transportation of freight and passengers are required to possess a number of personal qualifications without which no railroad would be able to accept them as employees. No high degree of education is expected, a thorough grounding in the subjects taught in the elementary school being considered sufficient for men who want to become engineers, conductors or yardmen. But a great deal of stress is laid upon physical endowment, native intelligence and certain important characteristics of temperament.

A good physique—sound health and vigorous strength—is essential for men who wish to become railroad workers. Before they can qualify for employment, they must pass a general physical examination and certain special tests to determine whether their vision, sense of color and hearing are perfectly normal. The first is necessary because much of the work is very strenuous, and exposes the worker to all sorts of weather conditions. The special tests are indispensable because engineers, brakemen, firemen, switchmen and, in fact, all train workers, must be thoroughly able to perceive and distinguish the many different signals employed, and to react promptly to them.

Besides being examined physically, the prospective railroad employee is also tested for his mental capacity. This means not education but mental alertness, the ability to grasp a great many details and to manifest an instant comprehension of a given situation, and the ability to use good judgment in dealing with such a situation. It is easily seen how important such qualifications are for the men upon whom depend the life and safety of so many people.

Equally necessary for the safe execution of the duties of a railroad worker are temperance, punctuality, honesty, a sense of responsibility and an observant and attentive mind. With these qualities must go a willingness to do hard and strenuous work and to face danger. The fact that work on a railroad so frequently exposes one to accident is its chief drawback. But the invention and installation of numerous safety devices and the growing influence of "safety first" campaigns are doing much to lessen the chance of injury. The exercise of a reasonable amount of care by the worker can further reduce the danger of railroad work to a practically negligible factor.

The man who possesses the fundamental qualifications already mentioned, and who has, besides, a high degree of executive ability, is eligible for one of the more important positions. Many men who have not been unwilling to begin with hard and often very unpleasant work, through their ability to handle men and get work done well, and through their broad insight into the problems of administration and decisive action in dealing with such problems, have been able to advance from the lowlier positions to even such important ones as those of superintendent and general manager. It is true that promotion in the operating department frequently depends upon seniority, but the man of unusual ability has excellent opportunities to forge ahead and attain an executive position.

A man who sets out with the object of attaining such a position has a chance to do so even without much more than a common-school education. But if he has a college or thorough technical education in addition to the necessary natural qualifications, it is probable that he will more easily be able to reach his goal. Various universities have, in their engineering schools, valuable courses in civil, electrical and mechanical engineering, and in the administration of large engineering and business undertakings; and some of the higher technical schools also offer suitable training.

Even though a young man has been graduated from a technical school or college, he cannot hope immediately to enter upon an important executive position. In order to fill such a position, he must know the railroad business thoroughly, and should have had considerable experience in handling men and supervising large projects. For these reasons, most young men who have had a higher education start in a humble position, learning everything possible about the various branches of the railroad business, and gradually working themselves up to a place of responsibility and power.

Most of the young men who enter upon railroad work have had, however, no such training as that which the colleges offer. The grammar school, or a few terms in the high school, has been the extent of their formal education. The work of the locomotive engineer, switchman and conductor cannot be learned otherwise than by actual experience. The railroads themselves train practically all of their workers. Most of the large railroads maintain schools wherein young men are trained for all the different sorts of railroad work. The schooling obtained in this way resembles that to be gained from an apprenticeship. The student is sent into the different departments, and learns something about the work of each. He learns how cars are built and repaired, how they are run, how the business of the road is carried on. When he has finished such a course, which involves much hard work, he has a sufficient understanding of the mechanism of a large railroad, of the practical details of its administration and operation, to work himself up into a desirable position.

Men are trained in other ways, too. They are accepted as apprentices in the machine shops, where they work for a number of years at low wages, and receive in return a thorough training in railroad mechanical work. Others are employed as helpers or hostlers in the yards and roundhouses. Here, while they are working at their various nontechnical odd jobs, they have an opportunity to learn many practical things by observing their superiors. At the same time they may receive instruction from traveling officials of the railroad. After a while they may be given several trial runs as firemen and, proving their ability, they may be further tested by examinations, and finally appointed as firemen. Further promotion comes to able workers, and sometimes men who start as hostlers become engineers, conductors and even division superintendents. There are many examples, in the history of railroads, of men who have risen to the very highest from the very lowest, and such things are also possible now for the man who has all the natural qualifications and, besides these, the ability to direct large enterprises and supervise the activities of great numbers of men.

It is true that in many cases promotion depends upon seniority, but even this will not eliminate the exceptional man's chance to advance. Railroad work is hard work and brings with it a great amount of responsibility, to the brakeman as well as the general manager. In the lower positions there is the constant menace of physical danger; in the higher positions there is the nervous tension which usually accompanies very responsible work. At times when trade is depressed, employment may be uncertain, or wages lowered. But the work of the railroad man has many advantages. It pays well and offers opportunity for advancement and for doing the particular type of work for which one is best fitted.

Although thousands of passengers are annually carried on the great railroads, the transportation of freight is much more important and profitable. The street railways, urban and interurban, are the great passenger carriers. The street railways include the street cars, the subways and the elevated trains in the cities, and the electric cars in the suburban and country districts. The work of the conductor or motorman on a street railway is simpler than that of a conductor or engineer on a great steam railroad. Prospective conductors or motormen learn their work by being sent out on cars, and by operating them under the supervision of trained and experienced men. On the subways, engineers usually begin as guards or brakemen. Electricians and mechanics in large number are also employed by the street railways, at the head of which are executives whose work is, in its way, as important as that of the heads of large railroad companies.

The street railways are doing a great deal to develop suburban regions and to facilitate travel in the large cities. What they do locally the great railroad systems do on a huge scale. They are among the most important factors in the development of trade and industry, and in the maintenance and promotion of the country's prosperity.

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CHAPTER XLVII

VETERINARY

The work of the veterinary, or "animal doctor," may be regarded from two principal viewpoints—its humane and its economic significance. In curing animals of disease and preventing disease, the veterinary lessens suffering among dumb creatures. In studying the diseases of animals, ascertaining which of them are communicable to man and then working to prevent the communication of such diseases to man, he renders another great service. And, finally, in preventing and curing sickness in animals, he lessens the financial loss involved by the death of live stock, and does his share also towards maintaining a sufficient meat supply for the needs of the country. Plagues and diseases attacking cattle, hogs, and poultry have resulted in great economic loss. Not only have individual ranchers or farmers lost much money through the death of stock, but very often disease has attacked large numbers of animals, the meat supply has been insufficient to meet the demand in a particular market and unusually high prices have been the ultimate result. The alleviation of physical suffering on the part of animals and men, and the prevention of economic losses, are the accomplishments of the veterinarian.

Just as great strides have been made in the study and practice of medicine by physicians, so, too, vast improvements have within late years been made in the study and practice of the veterinary science. The importance of the work of the veterinarian has been recognized in several ways. Both the state and the individual employers of veterinarians demand that these men be scientifically trained in their profession, that they shall have completed a course of study at a reputable institution and that they be licensed to practice veterinary medicine by the state. By providing that veterinarians be examined by a state veterinary board, and licensed by this body before being permitted to practice, the entrance of quacks and ignorant and untrained men into the profession is prevented. This provision has also led to the establishment of thoroughgoing courses in numerous universities, where students learn the theory and practice of their profession.

Just as in medicine the tendency today is toward prevention of disease, so, too, this same trend is manifest in the practice of the veterinary profession. The causes of many of the diseases and illnesses attacking animals are known, and a great deal of the veterinary's attention is given to eradicating or preventing these causes, and so minimizing the chance of animals becoming subject to illness.

The veterinary works to prevent the sickness of animals by seeing that the conditions of their feeding and housing are proper, by detecting and eliminating any dangerous conditions, by discovering the causes of infectious diseases and the methods of controlling them, by segregating and treating sick or injured animals.

There are numerous opportunities for the well-trained and thoroughly capable veterinary. The first is in private practice. Many country districts, especially those devoted to the raising of animals for commercial purposes, offer a very profitable field for the independently practicing veterinary. The work may be either of a general nature, calling upon him to attend to the maladies of cattle, horses, fowl, hogs and other farm animals; or it may be more specialized work, where a neighborhood raises chiefly one kind of animal—such as cattle, swine or sheep.

The general practitioner of veterinary medicine is usually called upon to do work of various sorts. He attends to sanitary conditions, treats sick animals, performs surgical operations upon them when necessary and is a general "country doctor for animals." His work requires a thorough training in his profession, an observant eye, a steady hand, a good physique, health, strength and the ability to do oftentimes very hard work. Besides, he should have a strong and pleasing personality. Very often he will have opportunities to do work of an educational nature. In order to influence farmers and other owners of animals to change their ways of keeping and treating these animals, he will have need of the sort of personality which will give him the power to influence people favorably. He will need the gifts of logic and persuasiveness to make people see his viewpoint, realize its worth and act accordingly.

Most country veterinarians have a good practice and make a good living. In some cases, where an entire region is given over to the raising of live stock, a veterinary may attain a very large and exceedingly profitable practice.

There are also excellent opportunities for veterinaries in the private employ of ranchmen or owners of large live stock enterprises. A veterinary holding such a position devotes his entire time to the care of animals, treats such as are sick and makes suggestions for improvements in the feeding, housing and breeding of the stock. The veterinary employed in this way has not the freedom of an independent practitioner, but he has the satisfaction of steady employment and certain pay. The salary is generally a good one, beginning at about $1,500 to $2,000 a year.

There is also considerable opportunity for the veterinary in the public service. He can serve his city, state or country in one of several capacities. There are a number of desirable posts open to men who are graduates of a recognized veterinary school, and who can pass the necessary civil service examinations and have the requisite experience for the special positions they wish to fill. Veterinarians in the federal civil service do work which varies, according to their position, from the routine of live stock inspection to the carrying on of scientific research.

Veterinarians inspect live stock in the stock yards and in the field, see that it is healthy before permitting it to be slaughtered and look after the sanitary conditions of the slaughterhouses. Federal veterinarians carry on this work in cases where meat is shipped from one state into another; but, where a slaughterhouse supplies one state only, state or municipal veterinary inspectors look to the matters mentioned. Men holding the higher positions carry on the administrative end of the work, supervising veterinarians in the field and at meat inspecting stations; others undertake research work in connection with animal diseases. Veterinarians in the federal civil service receive from about $1,380 to about $3,660, and in the cases of the higher officials, more.

Veterinary bacteriologists also serve the public. They are engaged in scientific work in veterinary bacteriology. They experiment to discover facts about the transmission of animal diseases, diagnose maladies attacking animals, make special intensive investigations of specific diseases, and carry out highly important research work. The salaries for this type of work are from about $1,800 to over $5,000 a year.

The veterinary pathologists in the federal civil service examine animal tissues and other parts, diagnose diseases, investigate maladies and engage in and direct very comprehensive research efforts. These men earn approximately the same salaries as do the veterinary bacteriologists. Scientific work of the type carried on by veterinarians in the higher positions of the civil service will make a strong appeal to men who are endowed with a scientific trend of mind, patience, the willingness to engage in difficult and at times dangerous research work and the ability to follow out an idea and to think along original lines. Such positions will also prove desirable to those men who have a good deal of executive ability, who can originate and direct large enterprises and who can effectively supervise the work of large numbers of subordinates engaged in different types of veterinary work.

In the state and municipal civil service, veterinary inspectors, bacteriologists and pathologists are employed in positions similar to those in the federal service, at usually good salaries. These men also render very great services to the public. They prevent the sale of contaminated meat, see to it that animals are kept in a healthy condition and prevent and remedy animal diseases.

There are also a number of posts for veterinarians in the army. In cavalry divisions, where large numbers of horses are used, a veterinarian is very necessary. His work will be practically specialized, since he will deal chiefly with horses. The salary for men engaged in army work is from about $1,700 or $1,800 up. The life of an army veterinary may involve a good deal of traveling from place to place, especially in time of war, and in this case some danger, too. Ordinarily, however, it is not much different from that of the civilian veterinary doctor.

For men who are attracted to the teaching of veterinary science, there are numerous positions in the state and private schools. Teachers of veterinary subjects should have, besides a thorough knowledge of their profession, the ability to teach and some training for the work of teaching. Their work is very important, for it is their duty to train future veterinarians. The salaries of veterinary teachers are usually between $1,000 and $5,000 a year.

In order to enter a veterinary school, the student must usually have completed four years of high school work, in the course of which he should have taken up as much natural science as possible. In the veterinary school he will study, among other subjects, the anatomy and physiology of animals, chemistry, embryology, bacteriology and pathology. He will have opportunity to examine and treat sick and injured animals and to perform surgical operations upon them—in a word, to have some preliminary practice in his profession. After having successfully completed his course at the veterinary school, the prospective veterinarian is obliged to take the state examination for a license to practice.

The courses given at most veterinary schools are from three to four years in duration. At a number of state schools, no tuition fee is charged, but some of the universities offering veterinary courses make a charge of several hundred dollars a year. More detailed information may be obtained from the schools themselves.

Whether one looks at the work of the veterinarian from the standpoint of human health, health of animals or economic influence, its great importance is clearly manifest. The fact that veterinary practice is now based upon sound scientific principles and carried on by well-trained and efficient men has given the profession a new dignity, and has led to a growing perception and recognition of its value.

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CHAPTER XLVIII

WOODWORKING

Wood in its various forms enters more than any other substance into the industry of our nation, and the importance of its quick and economic conversion from tree to articles of general utility cannot be overestimated. The carpenter supplies one of the primal necessities of man—shelter—whether that shelter be for home or business. The furniture maker renders that shelter livable and attractive, and the cabinet maker furnishes such valuable adjuncts as stairs, mantels and built-in furniture. But necessary as are the products of these industrial workers, those who cater to the scientific and the æsthetic interests of man must not be forgotten. The automobile and the aeroplane industry could advance little without the workers in wood, who fashion the bodies of these vitalized machines, and life would be a poor sort of thing indeed were it not for those who create such aids to human satisfaction and contentment as the violin, phonograph, radio and piano.

The woodworking industry might be divided and subdivided into innumerable classifications, from the humblest machine worker in the mill to the highest paid building contractor of a large city. For the purpose of this course, however, only the strictest divisions of the industry, as carpentry, cabinet making and furniture building, will be considered.

The work of the carpenter is tied up with that of all other builders. First, the architect makes the plans and specifications, then the contractor plans the construction and the mason builds the foundation. It is now the carpenter's turn to erect the frame of the house, build its roof, put in the various partitions and take care of such parts of the interior work as the floors, stairwork, trim, hanging of doors and windows, etc. The house is then ready for the plumber, electrician and plasterer, but it is easy to see that the work of the carpenter is most important of all, though dependent to a certain extent upon some knowledge of the others.

The distinction is often made between the carpenter who works on the exterior of a building and the one who does the interior work. The latter is known as a joiner or interior finisher. The carpenter who will be most successful at his trade is the one who is able to do both interior and outside work, as he then has no fear of loss of time due to inclement weather, which so cuts down the earnings of the less skilled worker.

It might be well to mention here the machine carpenter, who has grown out of the old village carpenter. The products of machine carpentry are innumerable, and include furniture parts, interior finish, boxes, crates and musical instruments. If one cares for the trade at all, he is sure to find some portion of this work interesting. The industry is highly specialized, many factories confining themselves to the production of a single article. They are all bound together, nevertheless, by the use of common materials and machinery; and many of the operations are similar. This industry also includes special occupations, such as hand and machine carving, wood turning and saw filing, which require various degrees of skill and well-trained workers.

The introduction of machine work in place of hand work, which has taken place in the past few years, has made great changes in the industry of cabinet making. Now it is hardly distinct from machine-carpentry. Cabinet makers and their allied workers—the makers of chairs, frames, sashes and doors—assemble pieces of stock, which have already been cut, into built-up products. These men glue joints, nail and screw various parts together and make sure that the finished product is correctly, squarely and solidly built. Some of the finished products are furniture, wagons, automobiles, baby carriages, agricultural implements, boats, canoes and musical instruments, besides many special products, of which toys, games and gymnasium apparatus are examples.

For the most part, cabinet makers use hand tools in assembling their work; but occasionally they find it necessary to use certain machines. In some factories one worker builds up the entire finished article, but in most cases he completes one process and hands the work on. In fact, the industry has become so specialized that it can hardly be called cabinet work in the true sense of the word. The old-fashioned type of cabinet maker is found today among those who are engaged in making and putting up the better class cabinet furniture, such as is found in churches, stores, offices, banks and some dwellings. In this case the products are completely built up from specially made designs—the work requiring finer constructive skill as well as greater average intelligence. Some of the higher positions in this line demand an intimate knowledge of the processes and materials used in making the articles and the ability to handle men, but very little mechanical training.

The products of a furniture factory are fashioned from full-sized drawings, and the men who are employed as designers must be of the highest type, having an understanding and appreciation of the various styles of furniture and all the other artistic elements which distinguish exclusive designs. It is also necessary that these men understand the construction of materials that enter into cabinet or furniture production. They must know the series of processes which make finished products from the rough wood. They must know how the wood is purchased in the rough, dried, and cut to necessary sizes, and put through the various milling operations, and how all this is followed by assembling, gluing and finishing.

The skilled mechanic who has the added advantage of artistic ability will always find himself in demand in those shops where high-class furniture is made to order from special designs furnished by exclusive interior decorators. Musical instruments, such as the piano, organ, phonograph and violin, are made in special factories, but practically the same kind of work is done there as in all the other woodworking industries.

Scientific men have paid little attention to woodworking, though it is really a branch of engineering. The conversion of wood by machinery has greatly increased the interest in the industry, but there is still much room for scientific progress. The boy who is naturally intelligent and who has an active and resourceful brain will be the leader in the new developments, provided that brain has been scientifically trained. There was a time when the higher positions in the woodworking industries were filled by skilled foreign workers and the industries looked to the grade schools for helpers only. But the number of these foreign workers is continually falling off, and the demand for trained American workers is constantly increasing.

The young man who is naturally attracted by the possibilities in wood, who enjoys his elementary training in school in the practical application of woodworking, the use of hand tools and the elements of design, is almost sure to succeed as a woodworker if he applies himself to the trade. It is necessary that the machinery, the materials and the tools he will have to use in his work should interest him without any effort on his part. The young man who is always making little contrivances about the house is the one who is likely to make the greatest success as a worker or designer in wood. The boy who, when he passes a pile of lumber, can see in it a finished product, or who, when he passes casually through a building, notices where improvements could be made, has the native requirements of the future carpenter and the ultimate contractor who will be "his own boss."

More than this, the young man who is to succeed in the woodworking industries must be proficient in elementary mathematics, especially in geometry. If his mind is of a mechanical bent, he will master the elements of mathematics as though they were self-evident. The future woodworker must also have some ability in mechanical drawing, in order to understand the plans and make the necessary layouts. If he is to be a carpenter he should know something of all the other building trades as well as his own. He will never be a foreman, a building superintendent or a contractor unless he is acquainted with local and state building practice.

There are three distinct ways of learning the woodworking trades. The first is that which is more common in England than in this country—apprenticeship. The term is usually about three years and the wages are small. The second way is to "pick up the trade" by working under different employers. Because of the great variety of things the efficient woodworker must know, his chances of success are limited in this method by the work in which his employer is engaged, and by the interest the employer takes in the beginner. The third method is school training. This training varies greatly, starting with the ordinary trade school course, of about one year, which teaches the student to use the common tools, to operate a few machines and to make and read simple drawings, besides instructing him in the rudiments of finishing—and extending to the higher courses in Industrial Arts given in many high schools and universities.

Success may be obtained by followers of all these methods, but a combination of apprenticeship and school training is undoubtedly the best way to the desired end. One should get the best school training available, and then obtain employment in a woodworking establishment or with a building contractor, depending on the branch of work he wishes to follow.

Many of the big universities offer courses in Industrial Arts. These courses are wide in scope and provide an excellent foundation for future progress, if supplemented with practical experience. These courses, however, are three or four years in length and are as expensive as a regular college course. On the other hand, trade schools giving both day and night courses of one or two years' duration are to be found in all large cities, and such courses are much less expensive. There are free schools where trades are taught, and night schools where a boy can study, continuing with his other work at the same time. The local Board of Education will be glad to furnish information regarding such courses.

The building trades vary greatly in preparation and in pay—pay, of course, varying with the location, and the experience of the individual. But wages, even of beginners in the trade, are good. The carpenter who has passed through training and apprenticeship can easily earn $40 to $50 a week under normal conditions, and frequently more; and when he graduates into carpenter-contractor, and from that position to general contractor, his profits are considerable. The cabinet maker or furniture worker does not earn quite so high a wage when he first starts out, but his chances for advancement are good. His training as an ordinary workman will fit him for a position as foreman, and from this position he should gradually rise until he becomes a superintendent or finally a proprietor of a business of his own.

The woodworking industry is especially attractive in many ways. There is a certain stability about the trade and a constant demand for men. Employment at present is certain and, so far as can be judged, will always continue that way. Moreover, the woodworker finds it easy to move from one place to another and from one factory to another because of the similarity in the work. Working conditions in the industry are good, safety devices have been greatly increased of recent years and wages are continually increasing, with hours growing shorter.

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